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CA20NEA 92E03

Ontario. Environmental Assessment Board.

EP-90-03

APPLICATION BY THE CORPORATION OF THE CITY OF ORILLIA
FOR APPROVAL OF AN AMENDMENT TO ITS PROVISIONAL
CERTIFICATE NO. 250601, TO PERMIT THE GEOGRAPHICAL
SERVICE AREA OF ITS KITCHENER STREET LANDFILL SITE

CA20NEA 92E03



ENVIRONMENTAL ASSESSMENT BOARD

EP-90-03

Application by the Corporation of the City of Orillia for approval of an amendment to its Provisional Certificate of Approval No. 250601, to permit the geographical service area of its Kitchener Street Landfill Site to be enlarged to accept the domestic, commercial and solid, non-hazardous industrial waste from the Township of Rama and the Township of Orillia

BEFORE: **L. Gertler** - **Chair**
 A.D. Levy - **Member**

DATED at TORONTO this 24TH day of FEBRUARY, 1992

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IN THE MATTER OF Sections 30 and 33 of the *Environmental Protection Act*, R.S.O. 1980, C. 141 as amended;

- and -

IN THE MATTER OF an Application by the Corporation of the City of Orillia for approval of an amendment to its Provisional Certificate of Approval No. 250601, to permit the geographical service area of its Kitchener Street Landfill Site to be enlarged to accept the domestic, commercial and solid, non-hazardous industrial waste from the Township of Rama and the Township of Orillia;

- and -

IN THE MATTER OF the *Intervenor Funding Project Act*, 1988, S.O. 1988, c. 71.

APPEARANCES:

Counsel:

W.D. Russell - Counsel for the City of Orillia and the Townships of Orillia and Rama
 E.M. Green - for the County of Simcoe
 R. Pattison
 G. Meaker
 G. Glass - for the Director, Ministry of the Environment
 G.S. Watt - for Citizens Acting Now

Others:

C. Cooney - for WASTE NOT

REASONS FOR DECISION

1. Introduction

A hearing was conducted by the Board in September 1991 arising out of an application by the Corporation of the City of Orillia ("the City") to the Approvals Branch of the Ontario Ministry of the Environment ("MOE"). The application requested approval for an amendment to Provisional Certificate of Approval No. A250601 ("the certificate"), dated December 19, 1986, to permit the expansion of the area being served by the Kitchener Street waste disposal site ("the landfill"), a 40.5 ha (hectare) site (100 acres) owned by the City and located on part of lots 11 and 12, Concession 4 within the City. The actual waste disposal fill area is 24.3 ha (60 acres) and the remaining 16.2 ha (40 acres) is a buffer zone surrounding the fill area. The proposed expansion would extend the existing area now served by this landfill beyond the City to the Corporation of the Township of Rama ("Rama") and the Corporation of the Township of Orillia ("Orillia"), for a period of five years.

According to the summary prepared by the Director of the Approvals Branch ("the Director") for the Board, the City's population is approximately 25,000 people, and the expanded geographical service area will increase the population served to 37,500 (adjusted for seasonal residences). By the end of the five year term, the population for the three municipalities served is expected to approach 39,500. The landfill will continue to operate within the same fill area and accept only domestic, commercial and non-hazardous solid industrial waste.

The expansion will not affect the approved final contours of the landfill, or increase the approved volume of waste allowed. It was estimated that 41,600 tonnes of waste, or 70,150 m³ (cubic metres) would be received annually during the expansion period. The waste density is 593 kg (kilograms) per m³. The volume of waste expected over the 5 year period is 350,760 m³. In 1990, a total of 41,150 tonnes of waste was received at the landfill from the City (32,900 tonnes), Orillia (6,950 tonnes) and Rama (1,300 tonnes), of which 36,700 tonnes (11%) was buried (Exhibit 23). In a statement entitled "Waste Volume Calculations" (Exhibit 83) filed mid-way through the hearing, the annual volume of fill was estimated to be lower, 60,000 m³/year. The estimated remaining volume, as of June 30, 1991, was 1,375,000 m³, allowing for a site life expectancy of 22.9 years (from June 30, 1991).

The parties to the hearing, in addition to the City, were the Director, the County of Simcoe ("the County"), Citizens Acting Now ("CAN") and Colleen and William Cooney, who referred to themselves as Waste Not. Although the proponent was the City, its counsel Mr. Russell was, in effect, also representing the interests of the Townships. The three municipalities are located within the County. The Director is a mandatory party pursuant to s. 33(2) of the *Environmental Protection Act*, R.S.O. 1980, c. 141 ("EPA"). The County wanted to participate as a full-time party because waste management for the Townships fall within the County's jurisdiction. In February 1990, the County passed a by-law (N^o 3854) authorizing it to take over the waste management responsibility of its member municipalities pursuant to s. 209(a) of the *Municipal Act*, R.S.O. 1980, c. 302, as amended by Bill 201, S.O. 1989, c. 43. CAN and Waste Not requested full-time party status at the preliminary hearing. CAN is a citizens group comprised

of 340 families within the area. It was created in 1990, with the name of SIN (Stop Incineration Now), to fight the creation of a large waste incineration facility which was being considered by City council. Its name was changed in October, 1990, and its focus became the diversion of resources from landfill.

The proponent called as witnesses an environmental planner, a hydrogeologist and landfill staff members. The County called its director of solid waste management. The case for the Director included the local District Officer, a staff hydrogeologist and a representative from the MOE's Waste Reduction Office ("WRO"). The witnesses for CAN were its chairperson and a waste reduction consultant. Mrs. Cooney gave evidence on behalf of Waste Not, and called as a witness a local resident. In addition, 15 residents of the area gave evidence on their own behalf at the evening session which was scheduled for the convenience of members of the public who wished to present evidence to the Board.

The evidence, site visit and final argument extended over a period of nine days and five evenings.

2. Site History

The landfill was established in 1967 just west of the City's former landfill site, which was closed and converted to a municipal park known as Kitchener Park. The former site was operated by the City from the 1940s until 1967. The certificate for the current site was first issued by the MOE on April 29, 1981. In 1982, with less than five years of site life remaining, the City applied to amend the certificate to expand the landfill upwards. A hearing was conducted in February 1986, and the Board hearing that matter rendered its report on April 9, 1986. It recommended that the site expansion be allowed. Under the legislation in force at that time, the Board's power was recommendatory only.

The 1986 certificate, issued in accordance with the Board's recommendations, contained five conditions dealing with additional ground water monitors, annual reporting, decommissioning of the Huronia Regional Centre sewage line, evaluation of alternative approaches to solid waste management and protection of the peat zones around the site.

The waste disposal sites of the two Townships (Rama and Orillia) were closed by the MOE in June, 1988. An emergency provisional certificate of approval, with seven conditions, was issued the same month permitting the City to extend the service area for the landfill to the Townships. One of the conditions required the City to apply for approval of the expanded geographical service area. In September 1988 the three municipalities entered into an agreement dealing with such matters as the waste that will be accepted for landfill, who may haul the waste, tipping fees and cost sharing and a plan to jointly prepare a solid waste management master plan.

According to Ian Gray, the District Officer of the MOE for its Central Region (which includes the County), the County was facing many emergency or near emergency waste disposal situations in areas of the County to the north, west and south. The City's co-operation was vital to avoid a further reduction of the County's dwindling waste disposal capacity.

The City applied for approval of the expanded service area in December, 1988. The Board was informed that as part of the process of applying for exemption from the application of the *Environmental Assessment Act*, R.S.O. 1980, c. 140 ("EAA"), the proponent screened 33 other potential sites.

In February 1990 the County assumed control of waste management for the Townships (but not the City). The County gave its approval to the continuation of the City's application. A revised application was later submitted on December 4, 1990.

3. Physical Setting

The physical setting of the site is described in the following excerpt from Exhibit 54, the Hydrogeological Site Assessment And 1989 Monitoring Report dated June 1990 ("the hydrogeology report"), prepared by the environmental management firm of Gartner Lee Limited, retained on behalf of the proponent. The location of ground and surface water monitors is illustrated in Appendix 4 to these reasons, which is a reproduction of figure 1 in Exhibit 56, an August 1991 report from Gartner Lee entitled "Additional Testing Report":

The landfill is set in a flat, low-lying swampy area bounded on the north by the Mill Creek diversion, on the east by Ben's Ditch, on the south by Lake Simcoe, and on the west by the CN railway embankment The landfill has been built directly on the natural peat soils that presently surround the site.

This low lying swampy area lies at the toe of low hills that rise to the west. These hills make up the shoreline of former glacial Lake Algonquin and are comprised of sands. ... The site is isolated from Lake Simcoe by low sand and gravel beach ridges to the south. ... The glacial till shown on the southwest corner of Figure 3 comprises a small drumlin which trends in a northeast direction. The drumlin is part of an extensive drumlin field that stretches to the northeast, on the far side of Lake Couchiching. ...

The peat soil unit at surface was found to average about 1.5 m [metres] in thickness, ranging from 2.5 m in borehole 16 to 0.1 m in borehole 24. Successively underlying the peat are: a varved clayey silt to silty clay glaciolacustrine unit; a fine to coarse grained sand; and a sandy to silty glacial till. The sand unit above the till may be of limited lateral extent. ... The cross-sections in Figures 4a and 4b show the shallow subsurface stratigraphy and the variable thicknesses displayed by these units. The cross-sections show the stratigraphy to be more uniform under the centre of the landfill, becoming somewhat variable towards Lake Simcoe. Boreholes 26 and 17 [located close to the shore of Lake Simcoe], reflect a different stratigraphy, in that the silty clay unit which dominates the entire site is absent, probably due to historical near-shore erosional and depositional processes.

Bedrock in the area is Middle Ordovician age shales and limestones, lying 8 to 50 metres below surface. No boreholes have extended into the bedrock. (pp. 7-9)

The 1986 report of the Board included the following reference in the portion entitled "Geology and Hydrogeology":

The water table ... is near the surface in the swampy materials for most of the year. It fluctuates seasonally to about a foot deep in the summer. However, there are a few isolated locations in the swamp where it comes to the surface as ponded water. (p. 16)

David Schram is a senior environmental planner with the firm of Proctor & Redfern Limited, consulting engineers and planners retained by the proponent. According to his evidence, the distance between the buffer zone to the south of the landfill and Lake Simcoe is a minimum of 235 feet at the south-east corner of the landfill, and 1,210 feet at the south-west corner. Appendix 5 to these reasons is a map of the area surrounding the landfill, which is taken from figure 2 of a report (Exhibit 19) entitled "Supporting Documentation To An Application For A Certificate Of Approval", revised November 1990 and prepared by Proctor & Redfern ("the P&R Report").

Lake Simcoe (approximately 25 miles long and 15 miles wide), to the south of the landfill, flows northerly into Lake Couchiching (approximately 10 miles long and two miles wide), located to the east of the landfill, which in turn flows northerly into the Severn River. This river flows north-westerly to Severn Sound on Georgian Bay, a journey of about 40 miles from the City. The portion of Lake Simcoe near the landfill shore is very shallow. The depth is only seven feet at a point about 300 feet offshore.

To the west of the landfill, a CNR railway line runs in a north-south direction. The railway tracks are elevated to some extent, providing a screen for the landfill when viewed from the west. Scrub bush is found along the western boundary of the landfill. Highway 12, also referred to as the Orillia Bypass, runs in an east-west direction along the northern boundary of the landfill. This highway is also elevated, thereby screening the view of the landfill from the north.

Mill Creek is parallel and immediately to the south of the highway. In the past it travelled through the site, but several years ago it was redirected around its perimeter. Some of the buffer area on the north and west sides of the landfill site is a swampy muskeg area. Trees have been planted in the northern part of the site. Mature trees are found along the north shore of Lake Simcoe, to the south of the landfill.

Kitchener Park is on the shore of Lake Simcoe and directly east of the landfill. It is separated from the landfill site by Ben's Ditch, a drainage canal built many years ago, which travels in a southerly direction from Queen Street down to Lake Simcoe, where it discharges into Shingle Bay. Mill Creek discharges into Ben's ditch at the north-east corner of the site. The Board's 1986 report describes these two water courses in detail:

Mill Creek, about 75 metres north of and parallel to the site, is a slow-moving creek, a metre in depth and six to eight metres wide. The velocity is less than a foot per second. It drains predominantly agricultural area.

Ben's Ditch, which parallels the landfill 75 metres to the east, is eight to ten metres wide. It is about one metre deep. This is a dredged slow-moving stream. Depending on the wind conditions, sometimes the flow direction is reversed. It drains predominantly industrial and urban areas, also receiving the effluent discharge from the Orillia sewage treatment plant. (p. 22)

The July 1991 Monitoring Report by Gartner Lee (Exhibit 55) provides more detail about Mill Creek and Ben's Ditch:

Upstream of the western property boundary Mill Creek is a natural narrow channel, but becomes a wide slow-moving water course where it has been dredged along the northern property boundary. ... [I]t drains a catchment area of about 1,010 ha of which an estimated 150 ha are drained by storm drains. Surface water flows measured at station S7 in recent years range from about 15 l/s [litres/second] to a high of nearly 240 l/s, depending upon the season. ... The average of the four measurements made in 1990 was 129 l/s.

... Ben's Ditch is a wide slow moving water course with soft bottom conditions. ... [D]ischarge [from the sewage treatment plant] varies from between 190 l/s and 350 l/s. The peak flows occur in the spring and fall months, and the low flows happen in the winter periods. Occasional overflows are reported during heavy storm events, at which times the City chlorinates the discharge accordingly. (pp. 14-5) ...

Ben's Ditch accepts water upstream primarily from storm sewer discharge of an urban/industrial area. ... Input into Mill Creek largely consists of road, urban and agricultural run-off. (p. 24)

According to Exhibit 59, a chart prepared by Gartner Lee, Ben's Ditch drains an area of 338 ha upstream of highway 12.

Access to the site is from Kitchener Street, to the east, on a road which passes through an industrial area, across a small bridge over Ben's Ditch, and then through gates which are locked when the site is closed. The perimeter of the site is fenced.

4. Surrounding Land Use

Located west of the CNR tracks is an area of industrial and commercial development. Immediately north of the highway is a triangle-shaped area of low lying undeveloped land. North-east of this area is some commercial development. There is no swimming in Lake Simcoe beside the landfill. According to the 1986 report of the Board, the nearest swimming area is located about one half kilometre to the west, at the Huronia Regional Centre, a provincial residential facility for the mentally handicapped.

The City's sewage treatment plant, located amongst some heavy industrial plants, is beside and only 200 feet to the east of the landfill site. The water filtration plant is located on the west shore of Lake Couchiching at the eastern end of Jarvis Street, just north of Couchiching Beach Park. The distance between this facility and the point where Ben's Ditch discharges into Shingle Bay is 5-6 miles.

Rama, located east of Lake Couchiching and north-east of the City, is a predominantly rural farming area with no commercial centres. It is illustrated on Appendix 6 to these reasons, which is reproduced from a map of the area found at figure 1 of the P&R Report. The hatched area represents the City. There are several quarries in this township, but no major industries. The Lake Chippewa Indian Reservation is located here, although it has its own landfill facility. The Reservation contains some light industry. Rama has only two major roads, one of which, Rama Road, is the haul route for the garbage trucks which visit each Township residence once per week.

Orillia (Township), located on the west side of Lake Couchiching and north of the City and illustrated in Appendix 6, is also predominantly rural, although it has a larger population than Rama, along with some commercial areas and some light industrial operations. Highway 12 is the haul route for waste pick-up from this township to the landfill.

5. Jurisdiction

The Director referred the City's application to the Board for hearing as required by s. 30(1) of the EPA. The City's application was duly exempted from the application of the EAA by an Order in Council dated May 25, 1990, issued pursuant to s. 29 of that Act.

The mandate of the Board, as delineated in s. 38 of the EPA, is to approve, refuse, suspend or revoke the certificate. If approval is granted, the Board may impose, alter or revoke terms and conditions of the certificate. In making its decision the Board is required to consider whether the following provisions of s. 38(2) are applicable:

- (d) the waste management system or the waste disposal site does not comply with this Act or the regulations; or
- (e) ... the use, establishment, operation, alteration, enlargement or extension of the waste management system or the waste disposal site may create a nuisance, is not in the public interest or may result in a hazard to the health or safety of any person.

Mr. Glass, on behalf of the Director, submitted that the Board should restrict itself to the issue of expansion of the service area, and any conditions related to it. Mr. Russell suggested that the City's proposal to expand the service area will simply "fill our site a little faster than originally anticipated" (transcript vol. 13, p. 188). Mr. Green suggested that this application is for a relatively minor change to the City's certificate. All of the government parties stressed that the Board's jurisdiction is restricted to the EPA, and that EAA considerations must be excluded.

In our view, the City's application must be considered in light of the potential impact an expansion of the service area can have on the landfill, and as well, the environmental impacts caused by the landfill itself. As Mr. Russell put it, if the site is not working, from a hydrogeological point of view, with the original service area of the City, it is most certainly not going to work with the waste from the Townships being added.

Although the EAA is obviously not applicable to this matter, the scope of the EPA is nevertheless quite broad. The purpose of the EPA, as stated in s. 2, "is to provide for the protection and conservation of the natural environment". The protection of the public interest requires, in our view, an examination of the waste management practices of the City and the Townships.

6. The Report of the Board - April 9, 1986

In its report, the Board indicated that in 1978, an extensive study of approximately 21 alternative sites was undertaken. All of these sites were rejected due to concerns about the ability of ground water contaminated by landfill leachate to escape from the site. There were no other potential locations within the City.

At that time the County suggested that the City expand its existing site rather than search for a new one. The plan to expand the site involved the use of 12 cells, each of which could receive waste for about 1.5 years before being closed. To eliminate the risk of fracture of the sewage forcemain which runs below the landfill from the Huronia Centre, the Board recommended that it be plugged and relocated around the site. We were informed by Mr. Schram that this step will be completed when expansion of the landfill reaches cell 6. Mr. Russell indicated that this sewage line is no longer in use.

The report refers to the City's exploration of an energy from waste ("EFW") facility, or incinerator:

In 1981, a Committee was established to investigate the possibility of establishing an energy from waste facility. This energy from waste alternative was deferred for three reasons; the significant capital and operating costs, marginal quantities of combustible waste in Orillia, and the lack of a prime energy user. (p. 11)

The issue of a more recent examination of a potential EFW facility emerged during evidence at the hearing before us, and will be discussed later in these reasons.

In its report the Board reviewed in considerable detail the evidence with respect to ground water and surface water impacts from the existing site and proposed expansion. This too will be discussed in detail later in these reasons.

There were no parties in attendance at the hearing in 1986 other than the City. The only witnesses who testified were the consultants called by the City. The Board was informed that there were "no major objections from the residents to expanding the site" (p. 25).

The Board's conclusions were noted at the end of the report:

1. Studies have indicated that no adverse environmental impacts have resulted from the operation of the existing landfill.
2. The proposed progressive rehabilitation operations of the expanded elevated landfill will reduce the potential effects and impacts.
3. The landfill has been an established land use since 1967 and does not conflict with the Official Plan and Zoning By-law.
4. The existing acceptable access route can be utilized.
5. The site will be operated according to the engineers' plans submitted with the application.
6. A comprehensive monitoring program for ground and surface waters has been proposed.
7. Although the site is located near the built-up area in the City, adequate visual isolation is provided by the buffer and physical barriers.

8. The City has investigated alternative proposals for waste disposal. This application to expand by increasing the elevation of the existing landfill site appears to be the best solution.

Mr. Schram informed us that the City has complied with all of the conditions in the certificate.

7. General Issues

None of the parties opposed the expansion of the service area. CAN and Waste Not had a variety of concerns about diversion and reduction of waste, the landfilling of toxic waste, the City's planning process, public education and resistance on the municipal and County level to innovative input from interested citizens. There was considerable disagreement with respect to what should be included in the conditions of approval ("conditions").

The proponent's position is summarized in a letter from the City to the Director dated September 10, 1990:

After careful examination of these criteria and the data collected, the City concluded that the undertaking will not create any significant adverse effect upon the natural, social, cultural and economic components of the environment. ...

Based on two years experience with the "expanded service area", with Rama and Orillia Townships (under an Emergency Order), the City sees the issues for a Board Hearing to be the following:

1. Is the Kitchener Landfill Site being operated within its current Certificate and conditions?
2. Is the operation of the site meeting professional projections?
3. Are there any adverse impacts after 2 years of use by the two Townships?

The P&R Report described the application as follows:

The Kitchener Street Landfill has capacity to receive the additional waste with only a minor reduction in site life. The five year period is the minimal time required for the three municipalities to prepare a long term waste management strategy. The Townships and City of Orillia have demonstrated their commitment to the development of this long term waste management strategy by implementing recycling programs, by composting and segregating recyclable wastes at the landfill, and by agreeing to participate in the development of a Master Plan. (pp. 11-12)

In final argument, Mr. Russell indicated that although hydrogeology was an important matter, the focal point of the hearing was the subject of waste management.

With respect to the fundamental question of whether the service area expansion should be approved, with or without conditions, the Board heard evidence relating to the following general issues:

- Ground water impacts
- Leachate collection contingency
- Surface water impacts
- Wetlands

Monitoring
Operation of the landfill
Reduction
Re-use
Recycling
Composting
Hazardous wastes
Tipping fees
Bans
Traffic
Planning
Education

These issues are discussed individually below. With 29 witnesses, 105 exhibits containing more than 1,400 pages, and 2,399 pages of transcript, it was not possible to include in these reasons a review of all of the evidence and submissions received and considered by the Board. It was necessary to restrict the discussion in the remainder of these reasons to the areas of most concern to the Board.

8. Ground Water Impacts

The 1986 report of the Board referred to evidence with respect to the movement of ground water through the landfill:

The ground water flows laterally in all directions from the landfill. The water table has a flat gradient with the highest water table gradient on the site being only 2-1/2 metres above the lake.

Approximately 97 per cent of the leachate produced at the site moves laterally through the peat into the swamp at a rate of about 12 to 15 feet a year. The remaining 3 per cent infiltrates at a rate of 1 inch per year downward under the site through the peat and clay layer into the sand layer and then laterally discharging into the lake off-shore. The rate of lateral movement through the sand is 3 feet per year. ...

The Hydrogeologist explained that both the clay and the peat are good attenuating and renovating mediums. By the time the leachate moves through the swamp and discharges to the surface water it has good quality. ...

After 17 years of operating the existing site, Mr. Reynolds noted that there is just beginning to be a small effect of leachate in the sands beneath the site as a result of the 3 per cent vertical migration. The organics and metals are being attenuated in the clay but some chlorides are seeping into the sand. Borehole No.3 in the middle of the landfill shows that the chlorides have increased from a background level of 11 ppm [parts per million] to 19 ppm. He noted that the drinking water standard is 250 ppm chloride. ...

Mr. Reynolds estimated that in about 40 years time the chloride levels in the sands below the site would be the same as those in the leachate. This ground water would then move toward the lake through the sands. There are no wells down gradient of the site between the landfill and Lake Simcoe. ... This chloride input to the Lake would not be significant. According to Mr. Reynolds, the leachate

rate through the sands eventually discharging offshore in Lake Simcoe, would be .07 litres per second. ...

Mr. Reynolds agreed with the [MOE] that the increased height of the landfill would extend the length of time leachate would be produced even though the proper application and grading of final cover material would reduce leachate production. (pp. 16-20)

The 1990 hydrogeology report indicates that monitoring data establish that the landfill has had an "overall negligible effect on the natural environment" (p. 42):

Over 99% of the leachate ... moves laterally, either at surface or through the peat soils in the near subsurface. A significant proportion of this evaporates in the swamp, with the remainder discharging indirectly into the surrounding surface water bodies.

The leachate that migrates laterally to the surface waters undergoes extensive renovation within the organic rich swamp surrounding the site. No shallow ground water monitors have yet exhibited an upward trend in the concentration of contaminants since monitoring began. (pp. 42-3)

The report observes that a small component of the leachate moves vertically downward to the sand aquifer where it is attenuated (by decomposition, absorption or adsorption) to some extent and marginally diluted. This is consistent with the earlier evidence. However, monitoring has revealed some changes:

Although several monitors in the sand aquifer have exhibited recent increasing trends in the concentration of some leachate related parameters, this is not unexpected and the total concentrations are still quite low. (p. 43)

The July 1991 Monitoring Report (Exhibit 55) concluded (p. 32) that there was "no *measurable* effect on the off-site natural environment" (emphasis added), and no significant differences from data in previous years. There was no increase in contaminant concentrations in the shallow ground waters. With respect to surface waters, the report concluded:

There are no *measurable* effects of landfill leachate on the inland surface water courses surrounding the site, or Lake Simcoe which receives these waters. (p. 33, emphasis added)

The Additional Testing Report of August 1991 (Exhibit 56) dealt with a monitoring and testing program carried out in July 1991 at the request of Waste Not. It was prepared by Steven Usher, a hydrogeologist with Gartner Lee. He authored or co-authored the 1988, 1989 and 1990 annual monitoring reports for the landfill. Samples were tested for 11 compounds and elements: hexachlorobenzene, DDT (and metabolites), benzo-a-pyrene, cyanide, mirex, total PCB, lead, arsenic, dieldrin, toxaphene and mercury. The conclusion of Mr. Usher was stated in his letter attached to the report:

By way of summary, most parameters were not detected, or were very dilute in the leachate itself. Since this is the case, the likelihood of their migration to Lake Simcoe is remote. This is based on the tendency of these elements and compounds to adsorb, or attenuate, in the peat soils surrounding this site.

Mr. Usher explained in his testimony that the peat consists of decaying reeds, trees, moss and other vegetation. It is host to many micro-organisms which feed on the nutrients in contaminants. The ground water in this area flows in a radial pattern, with a minor flow from the west toward the landfill and then north to Mill Creek. The ground water from the site eventually reaches Lake Simcoe. He estimated the speed of the movement of leachate in the ground water to be approximately 10-15 m/year. There is approximately 36 inches of rain each year on average, of which a third is estimated to infiltrate the landfill, and the remainder is accounted for by run-off and evaporation. Less than half of the infiltrating precipitation penetrates the clay into the sand layer beneath.

Minerals in the clay serve to assist in renovating the leachate, and some attenuation processes are at work there as well. The effluent then moves quite slowly down to the lake. The discharge is through the sand layer which emerges in Shingle Bay beyond the shore. Ben's Ditch and Mill Creek have berms which have been built up from the dredging of those two channels. The berms serve to act as a barrier for surface water run-off from the landfill. There is also a built-up area along the shore of the lake caused by the natural washing up of material from the lake. These beach ridges also create a dyke which serves to slow the migration of surface water from the landfill into the lake. Mr. Usher pointed out that the only process affecting the leachate in the sand layer is dilution of the contaminants. The longer the retention time of the contaminants in the peat layer, the more attenuation will occur.

One of the indicator parameters, chloride, is considered a conservative parameter, because if anything can get through to the environment beyond the landfill site, it is chloride. It is not altered by micro-organisms. It is only affected by dilution. It is not, however, a health related parameter and it thus serves as a useful indicator for other contaminants which, although of greater concern, are likely to be more attenuated. The chloride is diluted by a factor of four or five times as it travels down to the lake. The concentration of chloride is about 30 ug/l (micrograms/litre) or 30 ppb (parts per billion) at the shore. Another indicator parameter is phenols. Peat is naturally organic, and contains phenols in the order of 5-6 ug/l. Phenols occur naturally in a higher concentration in peat than other kinds of soil. The phenol level in the leachate was measured at 50 ug/l (50 ppb). Phenols biodegrade, and at ground water station 21 just outside of the boundary of the landfill site, they were measured at 4 ppb.

The water flow from Ben's Ditch and Mill Creek into the lake is far greater than the flow generated by the ground water and surface water from the landfill. The sewage plant is the source of the largest flow entering Ben's Ditch, over 3,400 gallons/minute. A chart prepared by Gartner Lee (Exhibit 59) indicates that of the 435 l/s (litres/second) flowing into Lake Simcoe from Mill Creek, Ben's Ditch and the landfill combined, 2.5 l/s (0.7%) is attenuated leachate and 2.1 l/s is clean run-off. Storm water represents 39.5% and discharge from the sewage treatment plant represents 59.8% of the total.

Mr. Usher pointed out that although the phenols are above the Provincial Water Quality Objectives ("PWQO") in the test results, they are also in exceedence at the background monitors. With respect to Lake Simcoe the landfill is having an effect which cannot be measured because of the dilution factor caused by the large volume of water in the lake.

Mr. Usher advised the Board that the water quality of the lake has decreased. The water temperature has increased because of human activity, and this adversely affects the fish population. Impacts on the lake are caused by agriculture, sewage plants, and other human activities. Mr. Usher's conclusion is that the leachate is substantially attenuated within the peat area, and its impact on the lake cannot be measured. He does not say that there is no impact, but rather that it cannot be measured.

It was Mr. Usher's opinion that the additional waste from the two Townships would have no effect on the operation of the landfill, and that it will continue to function properly.

The Monitoring Report comments on landfill gases:

Although no gas measurements are taken as part of the monitoring program, gas has been observed venting from the surface of the landfill from time to time. These gases are likely composed of carbon dioxide and methane, typical byproducts of municipal refuse and decomposition. (p. 15)

With respect to methane Mr. Usher indicated that it is not soluble in water and therefore vents upward through the surface of the site. It cannot move sideways. The high water level forces the methane up and prevents it from spreading laterally. The venting of methane is in concentrations that, in his view, are not hazardous.

Mr. Russell commented in argument that the issue of ground and surface water impacts is of particular importance to this community which is located beside two large lakes.

David Wilkins, a biology teacher who lives in nearby Medonte Township, Coldwater, and is a member of the Orillia Greens, told the Board that dumps leak toxic chemicals, even if soil or clay cover is added. If toxins go into the site they will come out. The better constructed the site, the more slowly the toxics emerge. He agreed that peat is a biologically active material, but it cannot "chew heavy metals" as was suggested by Mr. Russell. It can only store them. He believes that not much is known about peat.

Chris Thomas lives in Mara Township and is a high school student in the City. He is the chair of the Orillia District Collegiate and Vocational Institute environmental issues group. He was concerned that the peat layer is not thick enough to filter and attenuate the leachate. The volume of leachate leaving the site is approximately 10 million l/year. He described the problem of "isostatic lift", which is the rising of the ground which was compressed during the glacial period. He is concerned that the bog will be disturbed by the uneven rate of isostatic lift, causing it to crack and dry out. At that point the micro-organisms will die, and the biological activity renovating the leachate will stop. However, Mr. Usher later testified that the rate of movement caused by isostatic uplift has been practically zero for the past 3,000 years.

Mr. Thomas was also concerned about micro-organisms which are at the bottom of the food chain. As they absorb contaminants and travel out into the lake, they are consumed by plants and fish. Bio-accumulation of contaminants increases along the food chain. He believes the water tests around the site are incomplete, as mercury and lead testing was reported as "status incomplete".

The evidence established that the ground water within the boundaries of the landfill has been contaminated by leachate. Exceedences of the PWQO have been detected within the site and at its boundaries. The ultimate impact is upon the surface waters in Mill Creek, Ben's Ditch and Lake Simcoe. This impact is discussed in section 10, which deals with surface water impacts.

9. Leachate Collection Contingency

The Board's 1986 report commented on the evidence relating to the need for and method of leachate collection:

Unlike most sites, Mr. Goodings [an engineer from Proctor & Redfern] noted that the hydrogeological study indicated that a leachate collection system was not necessary at this location. The existing buffer and swamp around the landfill area provided natural attenuation of the leachate. ... Although a leachate collection system is not required at this time, the consultant proposed a monitoring program to ascertain if the natural renovation of the leachate continued. If it did not, then a contingency plan was proposed to provide for the installation of a toe drain around the landfill to collect leachate by gravity to a pumping station where it would be pumped through a forcemain to the Orillia sewage treatment plant located adjacent to the site. He indicated that this plant had adequate capacity to treat the organic and hydraulic load of the leachate. ... As part of this contingency plan, a low permeability barrier wall of clay or man-made materials could also be installed around the entire landfill area. (p. 8)

There has been no request from any of the parties at the hearing before us that a leachate collection system be required at this time. Unlike many sites, this landfill is conveniently located next door to a sewage treatment plant, with the capacity to treat the leachate. This convenience minimizes the cost and difficulty of operating a leachate system. Ideally, this landfill and Kitchener Park (the old landfill) should have leachate intercepted and collected before it escapes into Lake Simcoe.

Mr. Usher testified that the volume of leachate generated by the landfill is 2.48 l/s or 78 million l/year. He stated that the volume in Mill Creek is 50 times greater than the flow of ground water out of the landfill site, and the chloride loading in Mill Creek is a thousand times greater than the contribution made by the landfill. When asked about the feasibility of having the sewage plant treat the leachate, he indicated that this was discussed with other consultants at his firm:

[I]t is a general consensus that the peat is a far more effective filtration, as it were, system than to take [the leachate] to a sewage treatment plant. So that every advantage should be made of that peat first, before taking it to the sewage treatment plant. (transcript vol. 6, pp. 111-2)

Mr. Usher was asked by Mr. Russell to explain the process by which the decision would be made to install a leachate system. He responded that the "triggering mechanism is ourselves" (p. 129). His firm reviews the monitoring results and looks for results which might indicate the existence of problems. The investigative stage is a slow process in which the parameter list is expanded. A determination must be made as to whether the MOE water quality guidelines have been breached for more than just an isolated occurrence. There are seasonal fluctuations, and any program would have to be designed to avoid triggering a major investigative program as a result of a small seasonal fluctuation.

Ultimately, the judgment call made by the professionals would be a very technical matter. Ian Gray, the District Officer, testified that making the trigger decision is usually a joint decision involving a municipality, its consultants and the Director. In the event that there is a difference of opinion, the Director would initiate the collection contingency and make the necessary order requiring compliance. When asked about the time required for the design of a system, Mr. Usher suggested 1-2 months. As for the installation of a system, he indicated that four months to a year would be the range, depending upon the urgency of the situation.

The landfill is not endowed with the kind of natural clay barriers which would prevent leachate from escaping off-site, increase residence time, and maximize natural attenuation of the leachate. The MOE's policy guideline 14-15, entitled "Engineered Facilities at Landfills that Receive Municipal and Non-Hazardous Waste", dated April 1988, includes in its position statement the following excerpt:

It is the Ministry's position that there are limitations to engineered facilities and it prefers sites in environments with characteristics that provide a high degree of natural protection (e.g. thick clay deposits).

In our view, this is not a site with a high degree of natural protection. We were told that if monitoring indicates that leachate collection and treatment is necessary, a system will be installed. Yet, given the size of Lake Simcoe and its dilution potential for the leachate discharge, it may be unlikely that the City or its consultants will feel the need to request that a leachate system be installed. As the issue of leachate treatment and cost was not explored in detail by the parties during the hearing, we prefer not to deal with it as a condition of approval. Nevertheless, we agree with the aphorism that "an ounce of prevention is worth a pound of cure", and recommend to the City and its waste advisory committee (referred to in condition 16) that the cost of installing and operating a leachate collection system, or a pre-treatment system, be explored and given serious consideration.

10. Surface Water Impacts

The 1986 report of the Board included a lengthy discussion of the evidence relating to surface water at pages 22-5. The evidence suggested that the landfill itself would have little impact on water quality in the surrounding water courses.

The 1990 hydrogeology report, which dealt with both ground and surface water, concluded that the landfill continues to have very little impact:

The effect of the landfill on the surface water quality in Mill Creek and Ben's Ditch has also been found to be negligible. The load of contaminants contributed to these surface water bodies is negligible in comparison to the background load of contaminants in the creeks. No surface monitoring stations have shown upward increases in contaminant concentrations since monitoring began.

The waters in Lake Simcoe down-gradient from the landfill also show no increase in contaminant concentrations. The lake waters generally show a uniform chemical make-up for station S15, which exhibits elevated levels of some parameters as a result of discharge from Ben's Ditch. Any leachate

impacted ground water moving directly to Lake Simcoe in the shallow flow system undergoes natural renovation. Further dilution from wave and current action within the lake results in no noticeable contaminant anomalies within the lake due to the landfill. (p. 43)

The Monitoring Report commented upon the break-out of leachate through the sloped sides of the landfill:

Due to the relatively steep slopes of the landfill, the leachate mound has been found to intersect the sides of the landfill from time to time. Diffuse areas of leachate seepage result. The sides of the landfill are frequently monitored by city personnel for these seepages. Upon detection, they are covered with a clean fill material. Persistent seepages are also controlled by digging vertically into the landfill at the seep location, breaking through any low permeability horizontal layers (such as daily cover layers), which may be creating a perched water table, thereby allowing leachate to infiltrate to the subsurface, rather than discharging on the side slopes. (p. 11)

Mrs. Cooney, in her cross-examination of Keith Marshall, the solid waste reduction officer for the City, asked how leachate springs and wet spots were corrected. He told her that a backhoe tractor digs down through the waste to the peat layer. The hole is then filled with stone and a clay cap is put on top of the stone. The clay cap forces the liquid to move downward into the peat. Leachate springs and wet spots only occur during a 6-8 week period in the spring when the water table is very high. These springs and wet spots are not of considerable volume or concern.

During cross-examination by Mr. Glass, Mr. Usher indicated that if a large amount of leachate contaminants was entering Lake Simcoe, he would have expected to see different test results. There are sand bars at a depth of only two feet, located about 250 feet offshore. Presumably, concentrations of contaminants would be detectable because of the containment effect of the sand bars. He attributed the elevated readings opposite the mouth of Ben's Ditch to discharge from that canal.

In his view, the elevated levels of phenols in the lake water were background readings resulting from general overall human activity around the lake. Another factor which would affect the fish population would be the overall increase of the water temperature of the lake. This factor is unrelated to the landfill.

During cross-examination by Mr. Watt, Mr. Usher indicated that he did not believe that benzene (a volatile organic compound, or "VOC") from gasoline and diesel fuel was causing contamination, as the indicator parameters had not changed over time. When asked by Mrs. Cooney whether the dumping of truckloads of snow at the site could be adding to the chloride levels, Mr. Usher responded that the landfill is contributing less than one-tenth of 1% of the chloride in the surface water flows. The level of chlorides in Mill Creek, as it approaches the landfill from the west, is 204,000 kg/year. The sewage treatment plant adds 540,000 kg/year to Ben's Ditch. According to the loadings calculations in Exhibit 54, table 6, the landfill adds only 386 kg/year to both water courses.

Bob Newell lives in the City and his parents lived there as well. He lives near the site. He indicated that garbage has been dumped in this area, at the old and the new site, for the past 40

years. He has observed that the wild rice beds in the lake near the site are now gone. The leaches are no longer there either. He indicated that it takes 10-15 years for the water in the bay (beside the site) to be completely replaced. He is concerned about the impact of the leachate from the old site, as well as the current site. Mr. Newell has caught fish in Shingle Bay which are cancerous. He would therefore not eat any fish from the bay. In his view, garbage should not be dumped at a site located beside the lake.

Mrs. Cooney filed written materials (Exhibit 88) which indicated that Severn Sound has been identified by the International Joint Commission as a hot spot for contamination of the Great Lakes. The main source of water for Severn Sound is the Severn River. She maintained that the escape of leachate from the landfill into Shingle Bay constitutes a violation of:

- s. 36 of the federal *Fisheries Act*, R.S.C. 1985, c. F-14 which prohibits the deposit of a "deleterious substance" (defined as one which would degrade the quality of water so that it becomes deleterious to fish or fish habitat) into water frequented by fish, and
- s. 13(1) of the EPA which prohibits the discharge of a contaminant into the natural environment if it causes or is likely to cause an adverse effect.

She recalled the year 1947 when water from Lake Couchiching was potable. She now sees green algae on rocks in Lake Couchiching and black scum along the water line of boats. This did not occur a few decades ago. She was recently out in Shingle Bay and she could not see bottom in four feet of water. She recalls in the old days when she could see the bottom in 15 ft. of water.

The Board concludes from the evidence that leachate contamination is migrating from the landfill site and flowing into Shingle Bay, either directly or via Mill Creek and Ben's Ditch, in significant quantities. Although the overall impact on Lake Simcoe may be relatively small, Shingle Bay has probably been adversely affected by the combined impacts from Mill Creek, Ben's Ditch, discharge from the sewage treatment plant and leachate migrating from Kitchener Park (site of the former landfill) and the current landfill. As the landfill is but a minor contributor to this degradation, we have concluded that this problem can be adequately addressed in the conditions of approval.

11. Wetlands

The Board's 1986 report included the following observation:

[I]t was noted that the lake level is about elevation 718 and the original ground surface of the site is 730 feet. Mr. Goodings stated that normally a swamp area would not be selected for landfilling but in this case no adverse environmental effects were occurring. (p. 9)

Mr. Usher testified that the wetlands surrounding fill area act as a buffer and receive most (86%) of the 78 million l/year of leachate which the site generates. Mrs. Cooney asked

Mr. Usher how long the peat can continue to function as an attenuating force. He responded that there is no literature which provides an answer:

We have no projection of how long the peat will work. The reason for this is that peat soils are just now becoming subject to this kind of research. Traditionally, landfills in a swamp have always worked and nobody has much cared about them. Now it is becoming a topic of discussion. (transcript vol. 6, p. 56)

He explained the process of renewal within the peat, as follows:

[I]t is an ongoing regenerative process. You get layers of organic matter, trees and things falling into this wet area which is ... anaerobic, which means not a lot of oxygen. So you don't get a very ready breakdown of the organic matter and it builds on top of itself. ...[It] will die, fall into the peat and give it a regenerating layer, and then more will come up, using those as nutrients, the following year. So the peat regenerates itself.

That is how the bog was formed, and ... continues. So there is some measure of confidence that the peat will continue to attenuate these things. (pp. 116-7)

His firm is involved in research for the MOE involving peat. Mr. Usher was of the view that since 1981 when Gartner Lee began studying the site, the peat has continued to function. The site is in equilibrium, as no deterioration has been occurring. Mr. Usher and his colleagues do not expect the waste stream to get any worse. Further, because of the lush growth in the area, more peat is being generated, which brings new attenuating capability forward.

The issue of wetland protection was raised by Mrs. Cooney during argument. She referred to, but did not file, an excerpt from the Great Lakes Water Quality Agreement of 1978 dealing specifically with the need for protection of significant wetland areas in the Great Lakes watershed.

According to Mr. Wilkins, Orillia is in a low lying area and much of the natural wetlands has been filled. Natural wetlands are important as they take toxins out of the air and water. However, he believes that they have been looked upon as "nuisances" in the past.

According to Mr. Thomas, bogs are designed to be natural cleaners, capable of processing natural things. The chemical products that society now uses, for example Raid and windshield washer fluid, are toxic and not easily broken down in nature. He was also concerned about the synergistic effect of mixing these toxic products together in the landfill and surrounding wetland.

Ted Duncan resides in the City and represents the Orillia Fish and Game Conservation Club. It has been active for over 44 years and is interested in recycling and conservation. The group wishes to protect the lake for fish and wildlife. They are concerned about the impact of the landfill, the sewage treatment plant effluent, other sewage plants around the lake and general development upon wetlands and water quality in Lakes Simcoe and Couchiching.

The Board appreciates the concerns expressed with respect to the use of the wetland buffer as an attenuation system. It is not possible to turn back the clock, however. This wetland has been integrated with the landfill for 25 years. There has been no suggestion that the landfill could

be made to operate without affecting the wetland. On the other hand, no evidence was presented which would indicate that the wetland has deteriorated since the Board hearing in 1986. Similarly, there has been no substantive evidence to suggest that the wetland will not continue to function properly, or that it will deteriorate in the future.

12. Monitoring

At the 1986 hearing, the MOE through correspondence expressed some concern about the need for more monitoring. This was described in the report:

The first concern of the [MOE] related to the stratigraphic correlation between borehole 17 and the rest of the site. Mr. Reynolds noted that two additional monitoring wells would be installed between the landfill and Lake Simcoe to confirm the geology of the site.

In the next concern of the [MOE] it was suggested that field filtering of water samples containing sediments should be performed to eliminate biased results. The consultant agreed to have field filtering as a standard practice.

In response to the third [MOE] concern, Mr. Reynolds agreed to install three monitoring wells west of the railway tracks to confirm his contention that leachate was not migrating off-site west of the railway tracks.

The extent of the leachate migration into the deep sands under the entire landfill site was the fourth [MOE] concern. Mr. Reynolds explained that the proposed monitoring program would assess the extent of this migration. ...

In the last concern of the Ministry, it was noted that if the two proposed boreholes, #21 and #22 are not sufficient to clarify the geology at borehole #17 south and west of the site, additional boreholes may be required. (pp. 19-20)

In its recommendations, the report proposed that a "monitoring program acceptable to the Director be implemented" (p. 28).

Mr. Usher testified that there were 48 ground water monitors at 28 locations, and 15 surface water stations. There is also a station offshore from Kitchener Street Park, the old landfill site, to test for leachate coming from that site. Since 1987 the test frequency has been three times per year for ground water, and eight times per year for surface water. Before 1987, the ground water was tested periodically. Testing began in 1981. The details of sampling requirements were determined in the Board's 1986 report.

The Director has received annual reports with data from the sampling program. In Mr. Usher's view, the important elements for testing are the "indicator parameters", which tend to indicate the existence of leachate in high concentrations, and signal if trends are occurring with other parameters. If the indicator parameters are within acceptable levels, the presence of other pollutants is probably minimal. Every site has different characteristics, and accordingly, the indicator parameters will vary from site to site. At this site, there are 16 indicator parameters with respect to ground water, and 32 indicator parameters with respect to surface water. The

indicator parameters which are often common to other sites are chloride, COD (chemical oxygen demand), electrical conductivity, phenol and iron.

Mr. Usher commented on the 10 pollutants identified in the International Great Lakes Water Quality Agreement which, according to Waste Not, should be monitored at the landfill. He stated that these 10 substances are not indicator parameters. At the request of the City, Gartner Lee proceeded in the summer of 1991 to test for 11 out of 13 parameters proposed by Mrs. Cooney: hexachlorobenzene, mirex, dieldrin, DDT (and metabolites), total PCB, toxaphene, benzo-a-pyrene, lead, mercury, cyanide and arsenic. Testing for these substances is more complicated than for most, and it was necessary that the staff of Gartner Lee attend and carry out the task. The samples had to be sent to a laboratory capable of doing the sophisticated testing necessary, and the cost was considerable (\$10,000).

Toxaphene is an insecticide used in the 1950's and 1960's to spray on crops or to coat farm animals to keep parasites away. It would not normally be found in domestic waste, as it is now very strictly controlled. It is easily adsorbed in anaerobic conditions. Benzo-a-pyrene, another pesticide, has low solubility and is easily adsorbed by peat.

The three monitors used for this testing program, numbers 3, 20 and 27, located within waste that had been landfilled, were selected because they were in an area with the most concentrated leachate. The first seven parameters were not detected. Number eight (lead) was detected at low levels, within surface water quality guidelines (PWQO). The ninth parameter, mercury, was not found in two of the samples, but was found in three others at a concentration six times greater than the limit permitted by the Canadian Water Quality Guidelines. However, Mr. Usher pointed out that mercury is very readily attenuated in peat soils. Mercury was not detected in the lake water. Free cyanide, the tenth parameter, was detected at low levels which were below the PWQO. Cyanide is readily degraded. The eleventh parameter, arsenic, was 100 times below the guidelines, and found to be close to minimum detection limits.

Two of the parameters requested by Waste Not were not included in the testing: 2,3,7,8-tetrachlorodibenzo-p-dioxin and 2,3,7,8-tetrachlorodibenzo-furan. Mr. Usher's evidence in this regard was as follows:

- these two compounds are very difficult and expensive to measure;
- if the total PCB was not detected, it would be most unlikely that these two compounds would be present;
- both of these compounds are by-products from the incomplete incineration of PCB's;
- they would not normally be present if PCB's were absent;
- since PCB's were not detected at this site, he would rule out the presence of these two compounds.

There was no scientific evidence presented by Waste Not to the contrary.

During cross-examination by Mrs. Cooney, Mr. Usher suggested that one could view 1 ppb as equivalent to five people out of the entire population on earth. In order to test at this level, the

leachate must be concentrated thereby magnifying the amount of contaminants so they can be measured. Concentrating the leachate increases the quantity of other more prevalent materials in the leachate, to the extent that they can burn out the testing equipment.

Mr. Usher felt that surface water monitoring could be reduced from eight times per year to three times per year. The reason for this reduction is that the substantial data base amassed over the years precludes the need for monitoring with the same frequency. Because of the relatively small volume of leachate leaving the site, and its slow rate of travel, no sudden changes could occur in the area of the site in any event. He stated that if problems do develop, they can be addressed at that time by more frequent monitoring. There was no opposition to this suggested change, which is reflected in condition 10.

The Board is satisfied that the proponent has complied with the terms of the 1986 certificate with respect to monitoring. The results of the additional testing, conducted in the summer of 1991, revealed that mercury, sampled in ground water at the centre of the fill area, was present at a level six times the exceedence limit of the Canadian Water Quality Guidelines. No reason was given to explain why mercury, a hazardous substance, was present in the landfill. Testing has not been performed to determine whether attenuation has successfully eliminated the mercury in the buffer zone. We have concluded that samples from the ground water monitors in the buffer zone should be tested for mercury throughout the 1992 monitoring program in order to verify Mr. Usher's opinion that the peat will effectively adsorb the mercury and prevent it from escaping beyond the boundaries of the site. This requirement is found in condition 9(c).

13. Operation of the Landfill

The 1986 report of the Board commented upon the proposed management of the expanded site:

Each of the 12 cells would contain about one and a half year's capacity. The area to the north and east would be completed as soon as possible. A shoulder area around the edge of the site would have a 24 per cent slope, or a slope of one foot in four. The top of the landfill would slope at 2% grade to the edges. This gentle slope would control erosion but permit surface water run-off. The buffer area would remain the same. ...

The amount of the cell opened at any one time would be minimized to reduce the amount of infiltration. Refuse would be covered daily with earth. Finished areas would be capped with 3 feet of clay and rehabilitated with grass and trees. The life of the site was estimated to be approximately 20 years. The type of waste accepted at the site would be the same as currently being landfilled, that is solid non-hazardous wastes from the City of Orillia. (pp. 7-8)

In its recommendations the report proposed that the landfill "be operated and maintained in accordance with the engineers' reports which were submitted" (p. 28). The purpose of condition 5 to this decision is to provide in one document a consolidation of the operations and development plan for the landfill.

Cells 1 and 2 have been completed and the work of rehabilitating them has begun. Final cover has been installed, and the surface seeded with grass. A number of trees have also been planted.

The landfill had progressed to cell 3 which was expected to become full by the end of 1991. The method of compacting waste at the landfill site has changed over the past two years. Better equipment has made it possible to increase compaction very substantially. Mr. Schram estimated that compaction is now something less than double that which was possible before. The site now has a life expectancy which is eight months longer than the estimates which were made at the time the application was commenced in 1988. He estimated that the remaining site life, with all three municipalities contributing, is 15.5 to 16 years. However, Exhibit 83, filed later in the hearing, estimated the remaining site life to be 22.9 years.

Mr. Schram estimated that the expanded service area would, over the course of the five year period of approval, reduce the life of the site by one year. His estimate was based upon the larger population served and an assumption that there would be an increase in waste generation of 1.2% per year on a per capita basis.

Exhibit 24 is a diagram, revised in August 1991, illustrating the layout of the landfill working area. It illustrates the location of the following centres at the site:

- fine paper drop-off
- composter and blue box storage
- recycling drop-off
- household hazardous waste compound
- weigh scales and inspection building
- residential solid waste drop-off
- telephone book drop-off
- scrap metal recycling area
- leaf and yard waste composting area
- asphalt separation area
- tire recycling area
- concrete separation area
- brush, stumps and clean demolition material area.

Generally, Mr. Schram gave this site high marks for the manner in which the site is maintained and operated. The site complies with the 19 requirements of s. 8 of Regulation 309, R.R.O. 1980 ("Reg. 309"), as amended. Mr. Gray, the District Officer, testified that this was one of the best sites in the County insofar as house-keeping and compliance with MOE requirements. It has improved substantially compared to his visits there eight years ago.

Mr. Schram was asked to comment on some suggestions made in the witness statement of Mrs. Cooney. Although he believed that it would be useful to work toward a complete sorting of all waste, he did not think that this should be made a condition of approval. He agreed with her view that no toxic materials should be landfilled. He also agreed that no reusable, recyclable or compostable material should be dumped at the landfill.

During cross-examination by Mrs. Cooney, Mr. Schram indicated that the sewage treatment plant was assessed for its ability to treat leachate. It was found that the plant could treat leachate, if necessary. The assessment is documented in a report prepared in 1985. Since that

time, the treatment plant has been upgraded, which would further increase its capacity to treat leachate.

Elmore Peel is the solid waste management superintendent for the City. He supervises the operations at the landfill. There are five full-time staff at the landfill, and five part-time staff. Mr. Peel takes the monitoring samples, having been trained by Gartner Lee for this task. The preparation of statistical data is now done manually. However, Mr. Peel planned to request from City council funding to computerize this activity.

Pests are not a problem at the site. He has seen only two rats since 1988, and believes they came on a truck with waste. Flies are not a problem. Although there are seagulls in the hundreds around the landfill site, their numbers are greatly reduced. In the past there used to be thousands of them. The reduction is due to daily ground cover. He has seen moose, deer, coyotes, red fox, mink, muskrat and beaver around the site. On occasion the beaver have dammed Mill's Creek and Ben's Ditch.

Noise is not a problem. The landfill equipment is up-to-date with modern and effective mufflers. A noise meter is on the site, and equipment is within the 85 decibel limit which is specified for operators. Two full-time mechanics from the City's public works department come and repair equipment when needed.

Mr. Peel indicated in his witness statement (Exhibit 70) that the City has supported the waste management program by not imposing upon its budget the across-the-board ceiling which was imposed upon all other municipal departments.

Mr. Marshall maintained that the site had developed an excellent reputation and has been visited by several municipalities which are hoping to develop or improve their own facilities. Mr. Peel indicated that his department has been exploring all programs made available by the provincial government. He felt that the quality of the City's waste management programs put it in the top 25% of municipalities in the province.

The staff at the site work as a team, covering for each other, and alternating positions routinely so that they are all familiar with all of the duties and tasks. Mr. Marshall gives tours of the site to members of the public. He also speaks to organizations and groups, including schools, as he believes that education concerning waste management is important.

The department has used community service orders involving teenagers or adolescents who are on probation, to obtain volunteer assistance with clean-up programs. Mr. Marshall indicated that the County has authorized the two Townships to comply with the City's waste management programs. Further, the Townships have agreed to a waste audit, which will be undertaken by Mr. Marshall.

Michael McMurter lives in the City and is a member of CAN. He has a background in civil and chemical engineering. He was concerned about low-weight high-volume waste which can fill up the site but would not generate an appropriate level of tipping fees. He gave as an

example a truck full of styrofoam. He feels that residential garbage bags should be inspected occasionally to provide some scrutiny of what goes into the site.

Bill Tinslay resides in the City and is a member of CAN. He believes that the landfill is very well operated, given its current mandate. However, he felt that the mandate should be more aggressive. Less material should be accepted at the site.

Jim Storey lives in Orillia and is a member of WMAC, the City's Waste Management Advisory Council. He is in the construction business and is a member of the Waste Management Committee of the Orillia and District Construction Association, and the Waste Management Committee of COCA (the Council of Ontario Contractors Association). He does not believe that most of the public are careful about what they put in their garbage bags. He is also concerned about the illegal dumpers, as he has observed old tires thrown in swamps, and other evidence of illegal activity. In his view a large portion of the population would rather save money than be concerned about waste management safety.

Both Mrs. Cooney and Mr. Wilkins raised a concern about the production of methane gas at the landfill. She referred to buried kitchen or yard waste as one source. She was concerned about the harmful effect of methane on the destruction of ozone in the atmosphere.

The Board is satisfied that the operation and management of the site comply with the terms of the 1986 certificate, the emergency certificate and the various requirements of Reg. 309. The concerns of Messrs. McMurter, Tinslay and Storey should be addressed by the landfill staff and WMAC. No technical or scientific evidence was called to establish that methane gas production at the landfill has created a problem. Mr. Usher testified that the methane produced is not substantial or harmful. It would have been helpful if measurements or calculations had been made by the landfill staff or the City's consultants in order to accurately determine or estimate the volume of methane which is produced. We would recommend that the City instruct Mr. Usher to prepare this information and provide it to WMAC and to Mrs. Cooney.

14. Reduction

Condition 4 of the 1986 certificate, requiring the City "to evaluate alternative approaches to solid waste management", was included in the certificate along with the following reason:

The reason for Condition 4 is to review current waste management programs which may be more suitable to handle the City's refuse in the future and the operation of this site without such condition would not be in the public interest.

Adam Ciulini is an engineer and the supervisor of the waste reduction unit at the Waste Reduction Office of the MOE. The purpose of that office is to accelerate the 3-R's, co-ordinate policy and regulatory development, consult with all sectors affected by the province's waste reduction initiatives and assist municipalities in reaching the provincial targets. Mr. Ciulini gave evidence as an expert in the field of waste reduction. In his witness statement (Exhibit 81), he defined waste reduction as follows:

Waste reduction refers to those actions which either partially lessen the amount of waste generated or eliminate waste entirely. Waste management needs are reduced or made unnecessary because waste is not created in the first place.

Reduction actions generally involve some change in behaviour on the part of the waste generator. An individual's decisions with respect to personal consumption of goods can affect the amount of waste generated. For example, packaging of various types is a part of most purchases and consequently packaging makes up a substantial portion of total solid waste. Consumption of goods with less packaging, all else being equal, will result in less waste. Purchasing goods in larger quantities or in bulk is one simple action which tends to reduce waste.

In the industrial/commercial sector, manufacturers should be constantly striving to reduce not only the amount of raw material consumed but also minimizing waste resulting from their manufacturing process and other business practices. Manufacturers can change processes and product designs to eliminate waste. (pp. 2-3)

Mr. Russell submitted that a speech made by the Minister of the Environment ("the Minister") in February 1991, established a benchmark for waste management in the province. Her remarks, a copy of which was filed in evidence during the hearing (Exhibit 51), indicated that the province's waste reduction plan involves diversion from disposal of at least 25% of waste by 1992, and 50% by the year 2000.

Although the terms reduction and diversion have different meanings, it appeared from the evidence that reduction was frequently used to mean the reduction of waste going to landfill (rather than reduction in the generation of waste). For that reason, this section includes reference to evidence dealing with both reduction and diversion.

The 25% and 50% diversion target set by the province are based on waste levels established in 1987. Mr. Ciulini agreed that the City is well on its way to meeting these objectives. In his witness statement, he provided a brief history of provincial waste reduction initiatives, which indicated that municipalities have been provided with encouragement and financial assistance in this area for more than a decade:

The [MOE] has encouraged various elements of waste reduction, reuse and recycling as early as 1974. At that time activities included efforts to encourage municipalities to establish central facilities for waste recovery, preliminary investigations into recycling and regulatory initiatives primarily related to beverage containers.

In August 1980, the Ministry announced a policy encouraging municipalities to implement recycling as a component of their waste management systems. In August 1981, the Ministry announced the Source [Separation Program] and the private sector. Funding was made available for promotion, costs, feasibility studies and operating costs.

After operating the Source Separation Program for five years, revisions and expanded assistance were made to it and [in] May 1986 the Ministry announced the present Municipal Recycling Support Program.

In 1987 the Ministry announced a Comprehensive Funding Program for waste management to provide financial support for the 3-R's as well as waste treatment/disposal facilities. This program also introduced financial support for industrial/commercial 3-R's projects. (Exhibit 81, pp. 5-6)

In July 1990, the City released a written Statement of Position (Exhibit 102) in which it announced, among other things, its new position on waste reduction and the 3-R's:

[E]verything possible must be done to encourage or force the 3-R's (reduce, recycle, reuse). We must stop using non-renewable natural resources where alternatives are available and stop using renewable resources at a rate higher than they can be renewed. ...

Garbage is a social problem and one that should be dealt with by the users and creators.

A series of positive recommendations were included in this announcement. The first five are set out below:

1. That we lobby provincial and federal governments to encourage or legislate the reuse and recycling of all waste products capable of being reused.

That we recommend this be accomplished through penalties on the use of virgin materials, tax relief to industries, recycling or research grants for recycling initiatives and that priority be placed on paper, plastics, glass and metals.
2. That we establish a Committee consisting of elected officials, city staff, the medical profession and interested citizens to examine waste management alternatives.
3. That we continue to investigate and inform the taxpayers on the pros and cons of alternative methods including cost information.
4. That we continue to encourage all forms of home reduction, reuse, recycling and composting, and immediately expand our programs to include apartments, retail and industry and further support our waste management staff in their initiatives.
5. That we continue to work with the Simcoe County Waste Management Committee to search for alternatives and solutions.

At the 1986 hearing, the amount of waste generation was estimated at 1,500 pounds (0.7 tonnes) per person/year. Based on a 1984 population of 24,040 persons, the waste load coming to the landfill was estimated at 20,300 tonnes/year. With a combined population for the three municipalities of 37,500 (an increase of 50% over the City's current population of 25,000) an estimated 36,700 tonnes of waste was buried in the landfill in 1990 (Exhibit 33). Total waste generated that year was 47,000 tonnes.

This is equivalent to 1.25 tonnes/person/year, 25% above the provincial average of one tonne per person (Exhibit 81, p. 11). According to some of the information provided to the Board, the amount of waste landfilled rose significantly from 0.7 tonnes/person/year in 1986 to 1 tonne/person/year in 1990 (36,700 tonnes ÷ 37,500 people), an increase of 43%. According to the statistical information filed along with Mr. Ciulini's witness statement, the residential sector generally contributes about 40% of municipal solid waste, with the balance coming from the industrial, commercial and institutional ("ICI") sector.

By way of contrast, the Board was informed that in 1989, the year compacting of waste commenced at the landfill, the volume of space used dropped by 3% to 85,000 cu.yds. In 1990, due to compaction and waste reduction, volume of waste dropped by 27% to 63,000 cu.yds.

This is difficult to reconcile with the information above, regarding the substantial increase in the amount of waste per capita which was landfilled.

A list was filed (Exhibit 74) by Mr. Peel providing a break-down of the composition of waste generated by the City and Townships, including the residential and business sectors. The following components amount to most (73% by weight) of the waste: 15% organics (yard waste, food from restaurants and stores, and kitchen waste), 16% paper products, 10% packaging, 15% cardboard and 17% miscellaneous (spoiled foods from refrigeration failure, broken windows, old chesterfields, etc.).

Mr. Marshall has been in his position for two years. His supervisor is Mr. Peel. 15-20% of his time is spent on-site, and the rest is occupied developing the blue box program and waste reduction activities. Where there are problems or complaints, he attempts to address them as quickly as possible. Mr. Marshall is firmly against mandatory recycling. The recycling program has nevertheless been very successful in his view. He projects about two more years before all municipal waste will be sorted and diverted but that will depend upon available grants, the additional remaining costs to the municipalities, and the willingness of the municipalities and their councils to co-operate.

When asked about the significant problem that packaging has created for municipal landfilling, Mr. Schram indicated that there are committees and studies ongoing with a view to controlling or reducing the proliferation of packaging. Mr. Schram indicated that the efforts made to reduce packaging might see results in 2-3 years.

There has been a reduction in the landfilling of demolition and construction materials of approximately 12% and Mr. Schram attributes this to the increase in tipping fees for these materials and to the fact that generators of this waste have found other uses for these materials. In response to cross-examination by Mr. Watt, Mr. Schram refused to concede that the economic downturn may be a factor in the decrease in the landfilling of demolition materials. There has been a program by the City staff to divert demolition materials. He cited as an example the demolition of several large barns at the Huronia Centre. Instead of an anticipated 50,000 tonnes of demolition material, only 6,500 tonnes actually went to landfill. The Provincial Ministry of Government Services co-operated in requiring the demolition contractors to make satisfactory arrangements with the City as to how the demolition materials would be disposed.

Mr. Marshall also discussed the destruction of the barns at the Huronia Centre. However, he indicated that only 50 tonnes of material was landfilled. According to his evidence, one of the components of the demolition was 6,500 tonnes of concrete containing rebar, which is concrete reinforcing rods. Because the rods are steel, and therefore rust, the concrete is not considered inert fill. The metal will leach from the rods while in the ground. As a result, the concrete cannot be used as clean fill and must be taken to the landfill. Mr. Marshall was instrumental in having the demolition contractors break up the concrete on-site and remove the rebar. The concrete was then crushed and used for lot cover, and the rods, pipes, fittings and other metals were sent out for recycling. Shingles from the roofs were also sent away to recyclers. Only 50 tonnes of material was left over, and it was brought to the landfill and buried.

The contrast between Mr. Schram's estimate of 6,500 tonnes of landfilled demolition material, which is 130 times greater than Mr. Marshall's estimate of 50 tonnes, is but one example of the variety of conflicting estimates that the Board received from the proponent's witnesses and documents during the hearing. It demonstrated for the Board that little reliance could be placed on the estimates which had been provided.

In demolition projects, Mr. Marshall advises contractors on how to reduce the amount of material going to landfill. The wall and roof boards, which cannot be reused, are taken to the landfill and put into the compost pile. Sinks and plumbing materials, as well as other metals, are sent out to recyclers. Red brick veneer is crushed and sold. Basement concrete is sent out. The building department contacts the landfill staff when a building permit is requested. Messrs. Marshall and Peel attend construction association meetings in order to mingle and sell recycling to the people present. The philosophy of the recycling program is to find an alternative to landfilling materials, and then to penalize a party if he does not pursue the use of that alternative.

Mr. Schram believes that the provincial target of 50% reduction in landfilling by the year 2000 will be reached by the City. He expects that at that time that 22,000 tonnes per year will be put into the site.

Mr. Marshall indicated that the City's philosophy for further waste management involves pursuing communal composting and recycling centres. Mrs. Cooney asked what activities the City has undertaken to reduce garbage rather than just divert it. His answer was that he has not distinguished between the two. When asked about the issue of reduction alone, Mr. Marshall could not indicate any program or initiative that was under way. A recycling centre is an expensive operation, but he feels it is desirable. It involves resorting of the garbage that arrives, even though it has already been sorted by the generator.

In response to questions from the Board, Mr. Marshall agreed that performance monitoring is now required. It is time to take stock of existing programs and measure what is being achieved.

Mr. Wilkins testified that communities must aggressively pursue the 5-R's. For him, the 5-R's are re-think, refuse, reduce, re-use and recycle. We need full programs for each type of item which is dumped. We also need education about the 5-R's. He believes that it is necessary to reverse the perverse pride which industrial society has developed in the amount of garbage it is able to produce. The volume has boasted a community's industrial success.

Mrs. Cooney testified that the long term goal of the City should be zero discharge into the environment, and development of a conserver society. Calling a product "waste" inhibits creative thought. One person's waste is another person's resource. She suggests that society needs a paradigm shift in its thinking. Rather than looking at the back end (disposal), people should refuse, re-use and reduce at the front end, and then recycle anything that must leave home. In her view, a lot of money has traditionally been spent on the back end of the process. She analogized that you will not have to clean up the water if you turn off the tap. She suggested that society must begin to think in terms of "resource" management, not "waste" management.

She would like to see all waste sorted, preferably before it arrives at the landfill. Vehicles travelling to the site to drop off recyclables only add to energy consumption and exhaust pollution. In addition, she was concerned that the need to travel to and from the site in winter weather could deter some people from recycling.

Diane van de Valk, project manager for Wastewise, the Community Resource Centre of Halton Hills, testified on behalf of CAN. She was qualified by the Board to give expert opinion evidence in the area of waste reduction, with an emphasis on 3-R's and composting. Her report, Exhibit 52, includes a great deal of useful informational literature which should be examined closely by municipal staff and others interested or concerned about diversion. She did an evaluation of the City's waste reduction program by examining information which she received from municipal officials and requesting additional information where she felt it was necessary. As her data base she used information from the Association of Municipal Recycling Co-ordinators, dated February 1991 (Appendix 11 of Exhibit 52) which includes information from the 103 municipalities which are members. Since the City is a relatively small community, she took municipalities with 40,000 people or less and collected the data from 14 of them (tab 10). She agreed with the comment by Mr. Green, during cross-examination, that these 103 municipalities might not be typical of most municipalities in the province.

Her witness statement (Exhibit 76) provided the following synopsis of her assessment of the City's performance in this area:

Progress in waste reduction and recycling by the City ... and the Townships ... fails to demonstrate serious commitment to waste reduction and recycling initiatives. Further, the proponent's proposed waste management strategy is inadequate in view of existing municipal 3-R's programs elsewhere in the province, provincial government initiatives and current opinion.

During cross-examination, she explained that demonstration of a serious commitment would require program documentation and data. She would expect the City to be analysing its performance, and formulating plans for future targets:

The commitment by City staff is commendable ... to manage to achieve what they have with respect to furthering these programs without a plan, without a mandate ... I think they are paddling up stream. What ... these individuals require is clear direction so that they know what is expected of them. They have to have input on such a plan so that [they] can come up with some kind of overall strategy for waste reduction. (transcript vol. 11, pp. 183-4)

She was unable to say whether the City would meet the government's targets for waste diversion because the information she has received thus far is based entirely on estimates, not data, and is contradictory in places. Without reliable information, the predictions by Mr. Schram and City staff are not verifiable.

She indicated that the City's program does not appear to include any programs on waste reduction (reduction in the generation of waste) or reuse. She suggested that waste audits can assist in reduction. Further, there are steps which can be taken to assist retailers (and others) to use less material in displaying or shipping their products, or ticketing their merchandise.

With respect to program costs, her material referred to the availability of a host of government-funded programs.

She praised the amount of demolition diversion, referred to above, which she described as a "tremendous program". More demolition material was diverted from landfill in 1991 (6,650 tonnes) than in all of the combined diversion (3-R's and composting) for the years 1989-1990 (6,375 tonnes).

Kelly Clune is the chair of CAN. It operates a plastics depot and provides information programs for the schools. It is opening a plastics recycling plant for which grants have been received from the federal government (\$53,000) and local groups and individuals (\$103,000 in money and in-kind contributions). Mr. Green advised the Board that CAN should be recognized as having made "significant contributions" to the City. At the outset of his cross-examination Mr. Russell commended Mrs. Clune for her personal involvement in waste reduction and recycling.

It was a basic theme in her evidence that people and groups in the area should be "working together" to bring about an increase in reduction and diversion. As with Waste Not, Mrs. Clune thought the appropriate goal should be zero garbage, with waste perceived as a valuable resource. The municipalities and the County should not be waiting for government programs and financing to institute programs:

I think it is ... time now that we become responsible for ourselves. ... We have the authority as a municipality to implement programs to go far beyond the ... 25% reduction. ...

And there [are] people, obviously, begging for the programs to be provided to them as can be seen from ... the overwhelming response of people attending ... our plastics program.
(transcript vol. 13, pp. 47-8)

It was her evidence that it has been difficult working with the decision-makers, who have resisted initiatives made by CAN. She was critical of the support of City council to reduction and diversion. She cited as examples the following:

- Council gave minimal financial support for a recycling week organized by CAN.
- It took almost a year for council to establish its waste management advisory committee (WMAC), after it declared its intention to do so.
- Despite her qualifications and leadership in the area with respect to diversion, her application to Council to be appointed a member of WMAC was denied without a reasonable explanation.
- Council has failed to "inform the taxpayers on the pros and cons of alternate methods [of waste management] including cost information" as it promised to do in par. 3 of its July 1990 statement.
- Home reduction and reuse has not been encouraged, as promised in par. 4 of Council's statement.
- It took a letter from Bell Canada in November 1990, calls from Bell Canada in March 1991 and inquiries from Mrs. Clune in the summer of 1991 before a telephone book recycling program was established.

She questioned whether some of the City's recent initiatives came about because waste reduction and diversion would be an issue before the Board at the hearing.

The Board has several concerns about the City's progress in the area of waste reduction. More planning, evaluation and documentation appears to be needed. There is little to suggest that programs to reduce (as distinguished from reuse and recycle) are in place. The Board heard evidence that reduction in the generation of the volume of waste is of critical importance to the County and the province. Yet some of the figures produced suggest that per capita waste generation in the City is actually increasing. Without accurate data, it is difficult to determine how much waste is in fact being diverted from this landfill. Various estimates which have been produced are quite inconsistent. Predictions based upon these estimates cannot be considered reliable. City council's delay in establishing its advisory committee, and its refusal to include as a member a recognized and dedicated community leader in this field, were discouraging signs. These concerns have been addressed in conditions 16, 17, 18 and 21.

15. Reuse

Mr. Ciulini, in his witness statement, defined reuse in the following terms:

Reuse refers to those practices or systems which involve the repeated use of an item in its original form for the same or a different purpose. Repeated use made of a product tends to generate less waste. Refillable beverage containers are a common example of this type of system.

Reduction and reuse can be viewed as actions taken before waste is generated. Once waste is produced, the only alternatives available to a waste manager are to recycle or to dispose of the waste.
(p. 3)

Mr. Marshall puts companies together to help exchange materials. For example, Union Carbide was getting rid of 75 wooden pallets, and Mr. Marshall found a concrete block company outside of the City to take them. ARC Industries, located in the area, repairs used wooden pallets so that they can be reused. A restaurant which disposes of five-gallon pails is now giving them to a machine shop to use as containers in which to ship out its product.

Mr. Marshall has had discussions with Soldiers' Memorial Hospital regarding reusable materials. He has joined the hospital's waste management committee.

Mr. Marshall deals with the Ontario Waste Exchange to find homes for exotic materials which are difficult to place. He gave as an example the two local manufacturers of gymnasium mats, who produce trimmings of composite (bonded) materials. The individual components are easily recycled, but not so with the foam and polystyrene composites. In her comments on the City's program for waste exchange, Ms. van de Valk stated that more structure is needed. For example, more exploration would be appropriate to determine other places to which used skids could be diverted.

With respect to the community resource centre referred to in condition 17(1)(iii)(d), Mr. Peel suggested that it be located off-site (from the landfill) and operated by a community group or

service club. Volunteers could assist in the management of the facility. People could bring in reusable items, such as a refrigerator, which would be available for others to acquire. Items requiring minimal repairs, such as a lawn mower, could also be brought to the centre. An off-site location would allow for greater accessibility and permit people to come and browse during off-site hours.

The Board was impressed with the efforts made by Mr. Marshall in this area. Reuse would appear to deserve more prominence in the City's efforts, as it avoids the generation of waste. The concept of a community resources centre has been included in condition 17(1)(iii)(d).

16. Recycling

(a) General

This term is defined as follows in s. 1(53) of Reg. 309:

"recyclable material" means waste transferred by a generator and destined for a site,

- i. where it will be wholly utilized, in an ongoing agricultural, commercial, manufacturing or industrial process or operation used principally for functions other than waste management and that does not involve combustion or land application of the waste,
- ii. where it will be promptly packaged for retail sale, or
- iii. where it will be offered for retail sale to meet a realistic market demand,

but does not include,

- iv. hazardous waste or liquid industrial waste unless the transportation from generator to site is direct, and
- v. used or shredded or chipped tires.

In his witness statement, Mr. Ciulini described the concept of recycling as follows:

Recycling components of a waste management system are applicable at any point in the waste cycle after waste is actually generated. Recycling refers to those practices or systems which extract materials from a waste stream for beneficial uses as compared to disposal facilities such as landfills which destroy material resources.

Recycling is the separation of useful material at its source to meet a market demand. Recycling is also referred to as source separation. Recycling typically involves the use of systems which maintain useful materials in a segregated condition from their point of generation to their point of consumption. Some minor processing may also be necessary to ensure that the material satisfies specifications established by the consuming industry.

In the municipal waste sector, recycling refers to systems such as curbside collection, dropoff depots and office paper collections which handle waste newspaper, glass, metal cans, plastic bottles, corrugated cardboard and other waste papers. The Blue Box system is an example of municipal recycling.

In the industrial/commercial sector recycling is a very common activity based on the segregation of quantities of metals, paper, textiles and other process wastes originating from industrial enterprises. (pp. 3-4)

Mr. Ciulini provided (Exhibit 81, p. 5) some examples of general price levels for recycled materials when purchased directly by the recycler in the province. He noted that prices paid to a particular municipality will depend upon whether material is baled and the transportation costs:

Newspaper	\$50	(per ton)
Mixed glass	\$44	
Sorted glass	\$66	
Steel cans	\$75	
Aluminum cans	\$1,750	
PET bottles	\$385	
Mixed rigid plastic	\$99	

In response to questions by Mrs. Cooney, Mr. Ciulini stated that there would be a greater economy of scale in doing a 3-R's program County-wide, rather than on an individual basis in each municipality.

The government's evolving policy on recycling was reflected in the following excerpts from the Minister's remarks (Exhibit 51):

Mandatory recycling will be required in all but the smallest municipalities. ... More than half of Ontario's 3.7 million households now have direct access to recycling programs. I would like to see that number increase to 90 per cent of all households, including apartments, farms and cottages, by 1995. ...

We will be reviewing provincial assistance programs particularly enhancements to our current blue box recycling program. With your help, I hope to see this program expanded to include old corrugated cardboard, telephone books, magazines, boxboard and mixed rigid plastic containers. In remote rural areas where curbside collection is impractical, the development of depots will be encouraged and supported.

Mr. Gray reviewed a chart (Exhibit 31) detailing the City's solid waste disposal and diversion performance and agreed with Mr. Russell that an aggressive and innovative approach had been taken to recycling. He also stated that economies of scale favour a combined recycling program for the three municipalities, rather than separate programs for each.

Mr. Schram advised that a report was being prepared by him, in conjunction with waste management staff, on the 3-R's. He is helping them plan additional programs. In its transition to a multi-faceted facility, he described the landfill as one of the best of Ontario's small sites.

Steen Klint, director of solid waste management for the County, provided a note of caution about the state of markets for recycled materials, which are "terrible" at this time. For example, it is costing the County money to send white goods to recyclers. This situation has been caused by a depression in the steel market (no one is buying cars) and also, by the glut of materials

made available on the recycling market by Metro Toronto. He was optimistic, however, that these markets would revive in the future.

Ms. van de Valk indicated that if recyclables were treated as real resources, then the community would be prepared to store them, just like any other product, when the market has its low periods. Storage is necessary to allow for "wobbles" in a recycling program.

With respect to the Townships, Ms. van de Valk felt that they are in limbo. They have implemented only blue box and composting programs. Although there is a mutual arrangement at the present time with the three municipalities, more structure is required with respect to the City's role in the Townships.

In his cross-examination of Ms. van de Valk, Mr. Green suggested that diversion programs have developed generally within the past 2-3 years. She responded that community recycling depots have been in existence since the 1970's, and that the City of Kitchener, for example, began its recycling program in 1986. We are not persuaded that municipalities which joined the "band wagon" (to use Mr. Green's expression) in the past 2-3 years can justify their previous inactivity with the explanation that diversion is a recent concept.

(b) On-Site

Mr. Peel testified that the landfill staff will allow a mixed load with no more than 20% cardboard and no more than 10% demolition material to be buried. There is no baler on site, otherwise separated cardboard, up to the 20% limit, could be deposited at the cardboard depot and baled. A baler has been requested for the site.

Mr. Marshall indicated that if people arrive at the site with recyclable materials from outside of the three municipalities, the materials will nevertheless be accepted, as the philosophy of the department is to increase recycling. Mr. Peel testified that if trucks attend at the site with excessive amounts of recyclables mixed in with other wastes to be buried, staff will warn the drivers that their rates might be doubled if the situation does not change.

In August 1991, a spot check was conducted of domestic waste arriving at the site from the Townships. In 40 bags from Orillia, the staff found a large amount of recyclable materials. A letter written by Mr. Peel to Orillia (Exhibit 71) complained that a packer truck which arrived in August had a load which was 50% construction and demolition material, and more than 20% corrugated cardboard. The letter referred to the "abnormal" amount of blue box material found in loads from that Township. In the bags from Rama a smaller amount of recyclable materials was discovered.

Tires have been segregated at the site since September 1990. There are two companies currently competing for the right to purchase the tires for recycling. About 400 tonnes of white goods (large appliances such as stoves, refrigerators, washing machines) delivered to the landfill have been recycled.

(c) Blue Box Program

Mr. Marshall indicated there are 10,000 blue boxes now in active use in the community. In his view this means that there are at least 10,000 volunteers in the program, namely those members of the public who are sorting materials to help the recycling program. He wants to keep these volunteers friendly and co-operative. Mr. Marshall is concerned that a "ban" with penalties is a negative approach. He is concerned that even positive and sympathetic people can be alienated by such a measure. During cross-examination by Mr. Green, Mr. Marshall indicated that this philosophy of waste management fits very nicely with that of the County. His department has a good working relationship with the staff of the Townships and the County.

For apartment buildings, his department has adopted a blue bag system. The bags are similar to flight bags but they have a rubber lining inside. A "can cart", a 90 gallon cart on wheels, is located outside the building, usually on the way to the parking lot. Ideally, the building would have two can carts, one for bottles, cans and jars, and the other for newspapers. When people are leaving their apartment on the way to their vehicle, they deposit the contents of their blue bag into these containers. There are only two or three apartment buildings not participating in this program.

Mr. Marshall indicated that about 85% of the community is involved in the blue box program. In order to convert the remaining 15%, he felt that there would need to be more advertising, more education programs, and the help of WMAC. He expected that this issue would be addressed within the next six months. When asked how he would correct the problem of recyclables being put into domestic garbage (for example, hidden in garbage bags) his answer was more public education.

Blue box programs were commenced in the City in 1989, Orillia in 1990, and Rama in July 1991. All of the programs involve four components: newspaper, glass (colour sorted), cans (aluminum and steel) and plastic soda bottles. There is a sorting and processing facility in Barrie, the McLellan Recycling Centre, to which the material from the City's blue box program is delivered by a contractor. All residential units, including multiple unit buildings, are being serviced. There are ongoing discussions about increasing the scope of the blue box program to include items such as cardboard and plastic. Mr. Marshall indicated that the City is also considering adding fine paper to the blue box program.

It was Mr. Schram's opinion that Orillia's blue box program compares favourably with that of other municipalities. Most collect 4-5 items. More extensive blue box recycling would require a more sophisticated facility at the McLellan Centre. It is expected that this Centre will be developing in order to service a more extensive program.

Dr. Judy Caldwell, a member of WMAC and resident of the City, testified that hard plastic, soft plastic, boxboard, cardboard, fine paper and toxic wastes should also be picked up as part of the City's blue box collection.

According to Ms. van de Valk, the starting dates of the blue box program in the Townships (June 1990, and July 1991) were quite late. The materials collected in the blue box programs

of all three municipalities are standard. She referred to other municipalities which are collecting such things as mixed plastics, textiles, boxboard, catalogues, magazines, books and pie plates. She commended the recycling program in apartments. Apartments are usually difficult to manage due to factors such as the transience of residents and trucks having difficulty obtaining access. Eleven of the 103 municipalities she surveyed have imposed mandatory recycling.

Fine paper is not included in the blue box program, but should be in her view. A drop-off depot cannot capture enough of this resource.

(d) Industrial, Commercial and Institutional Sector

The private sector recycling industry has developed a corrugated cardboard program, with 165 depots located in the 3 municipalities at various ICI locations. Mr. Marshall has frequently discussed the issue of cardboard with commercial waste generators. Cardboard seems to be their biggest problem. If a commercial generator is bringing large volumes of recyclable material to the site, staff will approach the company and do a waste audit. Marshall finds that the companies are quite receptive. No company has turned them away. Some company employees have even called to complain that more should be done by their company to recycle. In response to questioning by Mr. Watt, Mr. Marshall agreed that there are about 1,000 businesses in the three municipalities. He estimates that he has contacted at least 50% of them. They have all been positive, and agreed to participate in the recycling program. On every Wednesday, the blue box truck travels exclusively to ICI participants.

Bill Bundy lives in Orillia and runs a company which employs about 30 people. His dumpster fees were increased last year and he became concerned. His business was generating a full dumpster of unsorted waste each week. He spoke with Mr. Marshall and as a result, now uses a dumpster for corrugated cardboard which is picked up once a month. He and his employees separate pop cans which he delivers every three weeks or so to the landfill. His business now recycles fine paper and metal as well. As a result, the company now generates only four garbage bags of waste (destined for the landfill) each week, which is picked up by the city at no additional cost to him.

The Huronia Regional Centre has a population of 1,200 people, including clients and staff. It is a large generator of waste. The Centre has now instituted an internal system, whereby the clients sort bottles, cans, jars, cardboard, newsprint, hard plastic and low density polyethylene. There are 90 gallon containers for recyclable materials on-site, which are picked up at least once a week. In Mr. Marshall's opinion, the Centre has a very successful recycling operation. There is a person on staff whose full-time role is to co-ordinate the recycling program.

Soldiers' Memorial Hospital is another large institution. Mr. Marshall commenced its recycling program with bottles, cans and jars, and then added newsprint. He expanded the program slowly, adding a floor at a time. Fine paper was difficult to include, because of the confidentiality issue. The solution was the acquisition by the Hospital of a shredder. The shredded paper is now added to the fine paper program. The staff there are quite enthusiastic.

Mr. Marshall was disappointed that he has not yet developed a boxboard program. He is pursuing the possibility of boxboard as packaging material for Paul Leskew's operation. Mr. Leskew's firm does electrostatic painting of railings and other such hardware. Mr. Marshall described for the Board two ongoing public programs, which he is following, involving boxboard (at the Bay of Quinte and in Halton Region).

With respect to glass recycling, there is one bottling company in the City, and another located nearby in an industrial mall. One company, Lakeland Beverages, was mixing its green and white broken glass together, thus preventing the glass from being recycled. Mr. Marshall persuaded the company to separate the two and now it has two bins, instead of one, for broken glass. As a result of this change, the revenue from the broken glass pays for the two bins. Further, the company has saved \$37,500 in the tipping fees it paid the previous year.

The bottling companies use shrink-wrap to wrap the pallets of bottles for shipping. They were using ordinary polyethylene plastic which is not recyclable. Mr. Marshall's department persuaded them to obtain recycled polyethylene from Polyethics Recycling Industries, a local manufacturer of recycled plastic, so that it could be returned after use and recycled.

Tony Gulmen lives in Orillia and is the owner of Polyethics, a company which employs 18 people. He uses 100% recycled polyethylene to make his products (75% of production is garbage bags): polyethylene film and bags. The company's major source of polyethylene is post-industrial, post-consumer waste. It is collected from various sources and sorted at the plant. His recycling process uses only low density plastic and redensifies the polyethylene. He has worked very closely with Mr. Marshall. The Polyethics plant is used as a drop-off centre. Mr. Gulmen testified that the staff at the landfill site are doing an excellent job in promoting recycling, and directing people to him with their used plastics. Polyethics has also been assisted by CAN's depot at the local IGA store.

Mr. Marshall described one occasion when he arranged to have school children in groups of 10 sort boxes of papers left behind by a company that went out of business. This produced three tonnes of fine paper and one ton of corrugated cardboard for recycling. Don Clune, from CAN, supervised this project as a volunteer, and Mr. Marshall provided the transportation for the materials.

With respect to high density or hard plastics (such as margarine containers) which are not included in the blue box program, Mr. Clune (and his wife Kelly) are starting a recycling operation. Mr. Marshall hoped that by October 1991 this demonstration project would get under way. At the end of the site visit, the Board toured the large vacant industrial building which will house this operation. CAN had already stockpiled vast quantities of containers which were awaiting the chipping machine. Many of these containers were obtained over the months from CAN's drop-off depot. Mrs. Clune was hoping that a side benefit of this non-profit enterprise would be the creation of several jobs for people in the community. Mr. Gray indicated that this project was an example of the potential for economies of scale:

I just see that it could open up new avenues for the people of Orillia. ... If this operation is successful, as part of the County co-operation, it may be possible to divert hard plastics from all over the County into Orillia. This is the way I see the joint options taking place. (transcript vol. 9, p. 75)

In the downtown area, where the shops are close together and there is not much room for the businesses to separate materials at source, Mr. Marshall's department is encouraging groups to get together, two or three stores at a time, to rent a bin for the collection of recyclable materials such as cardboard.

The City has been supplying bags to many offices so that they can separate their fine paper and deliver them to the site. More than three tonnes of fine paper is now received each week at the landfill. Most of the restaurants are part of the recycling program. They use 90 gallon can-carts for composting. The schools have also been sympathetic, and are beginning to implement programs. For example, the large schools are using a 45 gallon drum with a hole in the top, into which the children and staff deposit their used tins and bottles.

With respect to the recycling of items like couches, Mr. Marshall indicated that the department had given about six couches to ARC Industries about two months before the hearing. ARC has done a study of how much effort and energy is required to rehabilitate such items, so that they can be placed back in the community. They are requesting a grant for a pilot study. Mr. Marshall does not think that agencies such as the Salvation Army are appropriate for many old items such as mattresses and couches. Furniture items with fabric, such as these, often need rehabilitation before they can be expected to be reused.

In her testimony, Ms. van de Valk pointed out that although Mr. Marshall had visited 75 businesses, Mr. Peel indicated that there are as many as 1,000 businesses to examine. Of the 103 municipalities which she surveyed, 49 have blue box programs for ICI generators, and 13 out of 103 have a collection for fine paper in a white box pick-up program. She was concerned that there was no private sector pick-up program for fine paper and corrugated cardboard involving small waste generators. She cited as examples the commercial retail shops in the downtown area. Although there are 165 bins for corrugated cardboard located throughout the three municipalities, the small stores in the central business district need outlets as well.

Ms. van de Valk stated that waste auditing in ICI facilities is a necessity. Presently there is no formalized procedure for waste auditing. Information such as details of tonnages, estimates and plans for how to reduce tonnages is needed. Businesses require a waste reduction action plan in order to carry out an industrial waste audit (tab 18, Exhibit 52). The action plan is necessary to measure the effectiveness of an individual program. Each generator must be audited to determine the progress it is making with its program (tab 13, page 5 of Exhibit 52). Newsletters should be sent by the City to ICI generators. In addition, a market directory would be of considerable assistance:

Market directories are used by municipalities such as Peel, Waterloo, Metro, Hamilton-Wentworth as a method to provide information to industrial waste generators about where they may find markets for their co-products. (transcript vol. 11, p. 112)

She referred to the P&R Report (Exhibit 19, p. 33) which states that there has been a 16% increase of generated waste between 1988 and 1989. The report attributes this to importation and building materials. "Importation" refers to material coming from outside the service area. Both of these sources involve ICI waste. Yet there are no programs in place to analyse this increase. Ms. van de Valk testified that staff should go to the construction sites and identify what kind of materials are divertible. She faulted the P&R Report for failing to recommend what to do about this problem, and failing to discuss ICI waste audit programs. She was also critical of this report for addressing only five of the City's 16 diversion programs, and failing to discuss the diversion potential of the others.

Mrs. Clune testified that substantial amounts of cardboard are entering the landfill because the downtown businesses do not have a recycling alternative.

It became clear to the Board that the City has made great strides in recycling within a relatively short time. Further progress should be aided by the waste advisory committee, waste minimization plan and waste minimization strategy discussed in conditions 16-18.

17. Composting

This term is defined in s. 1(9) of Reg. 309 to mean "the treatment of waste by aerobic decomposition of organic matter by bacterial action for the production of stabilized humus".

Mr. Gray, the District Officer, testified that no application has been received as yet from the City for composting at the landfill. As a result of discussions with the MOE, the City has begun an experimental program:

The Ministry has been developing guidelines for composting and developing the quality of compost that we require, before it comes right out into the public sector. These have just about been completed. I think they are on the number three final draft now, in Toronto.

The City does have a copy of the drafts, and I understand they will be submitting an application shortly, and we will be evaluating that application against the draft guidelines. At the present time the compost is only being used inside the site.

(transcript vol. 9, p. 21)

With respect to leaves, the City distributed 30,000 clear plastic bags in 1990 for leaf collection. Ten bags were given to each household. A compacter truck was hired to collect the leaves. The bags were emptied into the truck so that the bags could be reused. There are also two drop-off locations for bags of leaves at City Hall and the landfill. The leaves were then dumped into the experimental compost pile at the landfill site. Mr. Marshall estimated that the compost pile contains 300 tonnes at present. The soil from the compost has been used for topsoil to vegetate closed cells. As a result, no new topsoil was brought onto the site to close cell one. In the fall of 1991, he expected that 50,000 bags would be distributed. These bags are purchased by the City and supplied without charge. Bags are used because a City by-law prevents the dumping of leaves on the curb to be picked up by the vacuum truck. However, the vacuum truck does collect those unbagged leaves that have blown onto the roads and curbs.

Dr. Caldwell pointed out that a few thousand homes do not yet have green cone composting units. In the backyard composting programs, the City is selling these composters for \$12.50 per unit, compared to the cost of about \$70.00. Rama Township has also commenced a backyard composting program.

Ms. van de Valk stated that wood waste composting is a very important program. Twelve of the 103 municipalities studied have banned disposal of wood. The data from the City indicates that there was a large increase in the volume of wood composted in 1990 as compared to 1989. She thinks that questions should be asked as to why this occurred. Is this material coming from contractors? Have we reached all of them? Can we do something to maximize the capture rate in this program? Is there more wood that is not coming into this program?

With regard to backyard composting, the participation rate is low compared to 6 out of 14 small municipalities which she surveyed. There is a very significant diversion potential in this area. A study in Durham region has determined that 32% of residential waste can be diverted into backyard composters. The MOE has recently increased its capital cost contribution to this program from one-third to two-thirds. She felt that the City can do a lot more in this area. It should purchase more units as an inadequate number of units have been distributed in the community thus far.

Ms. van de Valk pointed out the discrepancy between the estimate in the P&R Report of 1-1.5 tonnes of waste composted in 1989 (Exhibit 19, page 32, para. 4.4.3) and Mr. Peel's information which indicates composting of 200 tonnes of leaves in that year (Exhibit 52, page 23, table 8). This discrepancy should be explored. She estimates that the City should be able to divert 700-2,900 tonnes of leaves annually. An evaluation should be done with respect to leaf collection. It is apparent, in her view, that a significant quantity of leaves and branches are not being collected.

It seemed to the Board that the City's on-site and off-site composting programs are still in their infancy, but demonstrate considerable potential for growth.

18. Hazardous Wastes

In October 1990 the City was issued a provisional certificate (Exhibit 45) for the use and operation of a transfer station to deal with "waste household materials, that by reason of their type and/or quantity may require more than the usual care in handling and disposal". A few of the conditions in that certificate are reproduced below:

- 3 The owner shall ensure that adequately trained persons are on duty at all times, during the operation of the transfer station to provide proper supervision of activities. ...
- 6 Those wastes which by reason of their type and/or quantity which are to be bulked and shall leave the site, shall be transported, processed or disposed of by firms which are licensed for such transport, processing, or disposal by the [MOE].

- 7 Household hazardous wastes received at the facility shall be stored for a period not exceeding 90 days.
- 8 The City of Orillia, being a generator of household wastes that because of their type and/or quantity will necessitate transport, processing, or disposal by firms licensed by the [MOE] must prepare Generator Registration reports as required under Regulation 309 of the [EPA] in respect of such wastes.
- 9 The City of Orillia must submit to the Regional Office of the [MOE] quarterly summaries of the types and quantities of all wastes received and the ultimate disposal location of such wastes. These reports must be submitted within 30 days of the end of the quarter.

The City's household hazardous wastes depot, located at the landfill, is open six days each week from 8 am until 1 pm. The hazardous waste depot is serviced by a large independent contractor, Laidlaw Waste Systems Ltd. Two members of the landfill staff have been trained by Laidlaw with respect to hazardous wastes. Laidlaw experts are available to the landfill staff if problems or questions arise. Spot checks of loads of domestic wastes are periodically conducted by staff to determine whether hazardous wastes have been included.

In response to questions from Mrs. Cooney, Mr. Schram advised that the hazardous material accumulated in the depot is taken by Laidlaw trucks to its plant near Sarnia (at Corona) where materials are processed in different ways. He indicated that Laidlaw operates an integrated facility which includes a secure landfill, a chemical treatment plant and an incinerator. Laidlaw is licensed by the MOE to process toxic materials. He reassured Mrs. Cooney that Laidlaw is a competent firm and that the MOE is vigorous in its supervision of such facilities. Mr. Marshall reported that Laidlaw is opening a paint recycling depot in the fall of 1991, which will remove old paint from cans and crush the cans for recycling purposes. The system will even remove old dry paint from the cans.

In cross-examination by Mr. Russell, Mr. Ciulini indicated that there are only 25 household hazardous waste depots licensed in the province. Mr. Gray, the District Officer, responded in his witness statement (Exhibit 87) to the following issue:

Concern has been expressed over the years with respect to the potential impact of small household batteries containing cadmium and mercury entering landfill sites. A provincial program to handle these materials has not been established. (p. 4)

In his view, however, the monitoring data from the landfill does not establish the presence of any hazardous wastes. In any event, he stated that cadmium, mercury and zinc do not tend to migrate very far from the landfill area. He did not think that these components would likely escape through the casing of the batteries. During cross-examination by Mrs. Cooney, he stated that it would be an impossible task to determine what happens when different hazardous compounds mix with each other.

Mr. Peel indicated that hazardous waste is less than 1% of the waste generated by the residential and business sectors of the City and the Townships. Many municipalities have sought advice from him on obtaining approval for a hazardous waste depot, as the City is one of the few

centres which has one. For example, the nearby City of Barrie, with a much larger population, does not have a depot.

During cross-examination by Mr. Glass, Mr. Marshall indicated that there are no educational programs yet to help inform the public about the difference between toxic waste and "hazardous waste" as defined by law. For example, batteries are toxic though not necessarily "hazardous".

Mr. Marshall testified that if hazardous wastes are brought to the site's depot from a commercial generator, it is refused. The driver is directed to take the materials to a private facility which is licensed to handle such wastes. The hazardous waste depot serves the citizens of Mara Township as well as the three municipalities.

"Red bag waste" which includes materials contaminated by blood and biological wastes, are not supposed to come to the landfill. It has happened on occasion that some red bag waste has been discovered in the garbage of Soldiers' Memorial Hospital which was brought to landfill. The hospital staff have been very concerned about this problem, and have distributed a memo to all staff indicating that if red bag wastes are accidentally sent to the landfill, the hospital could lose its right to use the landfill. Red bag wastes are collected by the Decom company and transported to Gatineau, Quebec for destruction.

Mr. Marshall would like to see a public education campaign regarding the safe disposal of syringes, which are lawfully used by many people (such as diabetics) in the community.

The most serious concern for Mrs. Cooney was the landfilling of toxic, hazardous, deleterious or contaminated materials, including untested sludge from the sewage plant. She referred to the Great Lakes Water Quality Agreement which identified as contaminated waste soil which contains gasoline and diesel oil. Benzene is present in these materials, and benzene was referred to in that agreement as a hazardous pollutant. She referred also to the risk that radioactive materials, from domestic products such as smoke detectors, could be present in the landfill.

Mrs. Cooney conducted an informal survey of some shops in the City from which she was able to report that small discarded batteries are mixed with other waste which goes to the landfill for burial. Mr. Marshall indicated that in his department's inspection of garbage bags they have not found solvents, cleaners and potentially hazardous items. He felt that people do not throw these items away until the containers are empty. On the other hand, Mr. Gray testified that it would be unrealistic to expect that all consumers are careful or concerned about what they discard.

Mrs. Cooney advocated that no toxic substances be landfilled. She recommended that clear plastic garbage bags be required so that landfill staff can make quick visual inspections of their contents to see if any hazardous or toxic materials are present. She also suggested that the idea of a yellow box for toxics be given serious consideration. During cross-examination by Mr. Russell, she indicated that having a hazardous waste depot at the site is irresponsible, because it is wrong to pay a company \$300 per barrel to take hazardous materials to an incinerator elsewhere in the province. The fact that the depot is there suggests to the public that using toxic products is acceptable, because they will be taken care of safely by the depot. She

feels that putting toxics anywhere in the environment is irresponsible. It would be far better to educate people not to buy such things.

MOE-approved contaminated wastes are such things as soil soaked with gasoline and diesel fuel, or soil used to clean an oil spill on a highway. When an old leaking gas station holding tank is being replaced, the MOE requires that the soil around it be sent to landfill. Tanks that were in the ground before 1965 were ordered by the MOE to be replaced by January 1, 1991. Soil mixed with lubricating oil is also sent to the landfill, provided that no lead or other metals are included in the mix. According to Mr. Gray, the oil breaks down biologically using the process noted below, even though it is not volatile like gasoline.

This contaminated soil is spread to a depth of about one foot and turned over every day. This process continues until there is no remaining smell of gasoline. That is the method by which staff determine that the soil is no longer contaminated. The sense of smell is the test that MOE uses for detection. Mr. Gray was of the view that it is the most sensitive test available. At the site they put the soil in an area, separated from the working face, where it is spread out and aerated in order to permit the gasoline and other VOC's to evaporate (or volatilize). The soil is turned over frequently to permit complete evaporation and then used for final cover. It is not mixed in with the waste. Mr. Gray's evidence differed from the other witnesses, in that he maintained that this soil was used for daily cover (transcript vol. 9, p. 75).

A separate area has been set aside for the dumping of snow, which usually arrives with a mixture of road salt and sand. These loads will be weighed this coming year, and there will be a tipping fee imposed.

A resident of the City, Shaun Vinson, who is a member of CAN and has worked with Mrs. Cooney, testified that on one occasion landfill staff did not properly deal with some paint cans, used oil filters, paint stripper and small containers of solvents that he brought to the site. He did not challenge the staff at the time, or complain subsequently to authorities. His evidence was contradicted by the testimony of two staff members who were working at the landfill on that occasion. The weight of the evidence, in our view, does not support these allegations.

Ms. van de Valk indicated that paint represents a large fraction of toxic materials that come through these facilities. A paint exchange would be a good idea in order to reduce the amount which must be removed by Laidlaw for treatment.

As long as consumers acquire toxic or hazardous materials, the community must ensure their proper disposal. The Board is satisfied that the hazardous waste depot plays a valuable role in reducing the amount of toxic and hazardous materials which are buried. Although toxic and hazardous wastes may be differently defined, neither should be landfilled. It is clear from the ground water test results for parameters such as mercury and lead, that toxic materials are buried at the landfill. Many of the constructive suggestions made by the witnesses, such as instituting a yellow box pick-up program, should be given close examination. Public education is obviously critical in this area. Conditions 7 and 17(1)(i)(b) respectively deal with hazardous and toxic wastes.

19. Tipping Fees

Evidence was presented on both sides of the issue with respect to increased tipping fees, which are the fees charged for bringing material to the landfill. The Minister's remarks (Exhibit 51), filed by Mr. Russell, also dealt with this issue:

Our Ministry is also working with Treasury and Economics to look at ways of implementing a "true cost" pricing system for municipal solid waste management systems. ...

I am concerned that some municipalities and other landfill operators have often set charges and tipping fees that do not even come close to reflecting the real cost of opening, operating and eventually safely closing their sites.

Some municipalities then come to the province for transfer payments to cover their general cost shortfalls and then to our ministry for a grant to assist in safe site closure.

This is not a good use for taxpayer's money. We can no longer provide a virtual free ride to the dump for the resources we are trying to recover.

I would like to see many more site operators raise the tipping fees for waste disposal sites in the province closer to the real cost of disposal. A portion of the fees could and should meet the true costs and provide a reserve fund established by municipalities for 3-R's and other waste management activities. (p. 6)

There were no weigh scales on-site in 1986, but this has now changed. Scales were installed in the spring of 1988 and began operation on June 1, 1988. Tipping fees were not instituted until 1988. The original rate for regular waste was \$17/tonne. There have been three increases since then, the latest in 1991. Differential tipping fees have been used in order to deter the drop-off of recyclable goods for which there are other preferable destinations. A sample of the rates in effect, as off July 1, 1991, is set out below:

	(per tonne)
- Regular domestic waste, clean brush & wood	\$ 75
- Compostable leaves, grass, wood chips	\$ 45
- Mixed building & demolition materials, asphalt, concrete, stumps, mixed loads of wire, wood, etc.	\$150
- Tires	\$150
- Foundry sand, slag	\$ 45
- MOE-approved contaminated waste (i.e. soil)	\$150
- Recyclable corrugated cardboard (loads with 20%+)	\$150

Mr. Schram did not believe that increased tipping fees had resulted in an increase of illegal dumping. He provided the tipping rates for three other comparable areas - Simcoe (\$75/tonne, with a differential schedule), Bracebridge (\$75, with only one other item at a different rate) and Barrie (\$89). He did not think that the much higher tipping fee at the Keele Valley Site is a reasonable comparison as it is too far away from the City and it is subject to much different circumstances. He emphasized, however, that a vehicle from outside the three municipalities

could not deposit waste at the City's landfill, as the gate-keeper would not allow it to do so. The staff know the local trucks and drivers and would not be deceived if an outsider pretended to be from the area.

According to Mr. Klint, the County's approach to tipping fees is different than that of the City:

They [tipping fees] go to the County, to the solid waste management department. One of the principles that the department was set up on was [that] they would be entirely self-sustaining. We use no tax levies whatsoever in any of our operations, in any of our remedial plans or anything else.

All of our equipment purchases, operations, reserve funds and the like are funded entirely out of tipping fees. ... Plus grants. (transcript vol. 7, pp. 222-3)

Mr. Peel provided a summary of revenues and expenses for the years 1989-1991 (Exhibit 73). The estimated revenue in 1991 for the site has been revised downward by 21% to \$1,300,000 as tipping fee revenue has dropped. He attributes this to the recession, private sector recycling (I.C.I.) and residential recycling. The summary reveals that \$274,000 was removed from the reserve account during 1990. The reserve account is the surplus of revenues over expenses, and is devoted to waste management projects. The sum of \$50,000 was appropriated by City council in 1989 and \$300,000 in 1990 and spent on other municipal expenses. Mr. Peel indicated that the projected reserve at the end of 1991 would be approximately \$924,000.

Mr. Storey, a member of the community who gave evidence at the special evening session, believed that the City should use the extra income from tipping fees from the Townships to buy composting equipment for the creation of topsoil, and to build a depot for waste separation. He proposed that conditions of approval include a requirement that all tipping fees be used at the site to make it as safe as possible.

Ms. van de Valk stated that high fees are a tool to get waste generators to divert waste from disposal. In her view it is necessary that tipping fees be similar to neighbouring rates. The P&R Report (Exhibit 19) identified importation as a potential problem because of the City's low tipping fees. She agreed with the comments of the Minister that tipping fees should be "closer to real costs". She also agreed that part of tipping fee revenue should be used to finance the cost of 3-R's and other diversion activities. She referred to the surplus in the City's landfill revenue account, in this regard.

The Board is satisfied that the landfill's tipping fees have been moving upwards, and this trend will continue. However, some of the surplus revenue has been diverted each year into other areas by the City. The Board is persuaded that these revenues must be reserved for present and future landfill expenditures, and reduction and diversion programs. A fund must also be developed out of surplus to pay for post-closure maintenance and monitoring. This issue is addressed in condition 20.

20. Bans

There was considerable evidence as to the appropriateness and effectiveness of prohibiting the landfilling of certain categories of material. Material filed by Mr. Ciulini indicates that the MOE "is looking at province-wide bans from landfill sites of all recyclable materials for which markets exist or can be developed" (Exhibit 81, p. 18).

In final argument, Mr. Green stressed public participation as the vital element in a successful program:

No matter how many bans you impose, unless you are going to have pollution police on every corner, you are never going to get the system to work unless you have education, and the education starts with public participation. (transcript vol. 13, p. 241)

Mr. Marshall testified that he prefers to make members of the public "disciples" of recycling, rather than force them to comply with bans which are imposed upon them. His greatest concern about making the program less voluntary by the use of bans is that members of the public might become alienated from the program.

Mr. Peel was opposed to by-laws which impose prohibitions, enforcement mechanisms, inspection requirements and prosecutorial powers:

We like to think of banning in another sense, and what we want to do is stop material from being buried. ... [O]ur perspective is to charge higher tipping fees for material that we want kept out of the landfill site, such as tires and cans and cardboard, etc. Cardboard is a good example. If you have a load that contains 20% or more recyclable corrugated cardboard then we charge double for it. That's been very effective in stopping cardboard coming into the landfill site. (transcript vol. 7, p. 90)

Mr. Gray indicated that he does not see the point of banning anything from the landfill which can be processed or separated. However, he agreed that commercial waste generators should be treated differently. Because of the volumes produced, they can easily be tracked and traced. The ban on cardboard, for example, from the ICI sector, is therefore appropriate. He feels the ICI generators are in a position where they must co-operate with the City's program. On the other hand, it is much harder to detect illicit dumping by the small residential generator:

... I think we'll see exactly what has happened in the City of Toronto, when they banned a lot of the construction debris. It started showing up in the back-streets of Innisfil Township and West Gwillimbury. I think the oils would probably do the same thing. You will find them putting them on the road to control dust and that is not permitted any more. ...

I think we have had somewhere in the region of 50 or 60 complaints in Simcoe County of illegal dumping in laneways, on private properties, of this type of [construction] material. (transcript vol. 9, pp. 43-4)

On the other hand, Mr. Gray supported the concept of deterrent tipping fees, and did not feel that they would increase the likelihood of illegal dumping.

CAN and Waste Not wanted a prohibition against the landfilling of any reusable, recyclable or compostable materials. Mrs. Clune felt that violators should be prosecuted and fined.

Ms. van de Valk also supported the use of bans. In 68 out of 103 municipalities surveyed, bans have been imposed for at least one category of item. In 12 out of 14 small municipalities bans of some sort are in place. She pointed out that the Federation of Canadian Municipalities supports bans in order to divert waste from disposal. Of the 103 municipalities surveyed 45 have banned tires, 14 have banned leaves, and 27 have banned cardboard. The white goods program is adequate, in her view, although 11 out of 103 municipalities have banned white goods from their landfills. Cardboard is one of the first categories that a municipality might ban, because of the volume of cardboard which is generated and the fact that it is readily recyclable. At the Britannia site, for example, about 20% of the volume is cardboard.

In Halton Region bans were imposed. However, they were not used as a stick but as an educational tool. If residents did not comply with the ban, they were visited in order to educate them. Ms. van de Valk testified that the existence of a prohibition demonstrates to the public the importance of diversion.

On balance, the evidence has persuaded the Board that some level of prohibition is advisable. However, the details can and should be developed by the parties in conjunction with the waste advisory committee. This issue has been addressed in conditions 17(1)(i)(c) and 17(1)(iii)(e).

21. Traffic

The issue of traffic to and from the landfill was examined at this hearing, as it was in 1986. The report from the earlier hearing commented upon the traffic issue:

Most of the existing landfill-bound vehicles proceed south from Highway 12 on West Street to Kitchener Street and hence to the landfill access road. The average daily landfill-bound traffic represents about 275 to 300 vehicles or about 10 per cent of the traffic on West Street.

Thus Mr. Schram concluded that the established access route that has been used for the past 40 years is preferable. The refuse vehicles would be proceeding through a heavy industrial and commercial area on West Street where there is already traffic consisting of some larger commercial vehicles. As a planner he had no concerns about the effect of the existing access road and traffic. (pp. 10-1)

In argument, Mr. Russell pointed out that there was no evidence of complaints having been made to the landfill staff about traffic problems. A traffic assessment was conducted by Proctor & Redfern, based on data provided by the City. Traffic levels were studied for both the summer period, when the population in the area is substantially greater, and the remainder of the year. A report (Exhibit 35), providing a summary of the assessment, concluded that the general level of traffic on West Street South and Highway 12, at the busiest times of day for landfill traffic, is not heavy. The peak flows for landfill traffic do not coincide with the time when general traffic levels are greatest. For the period 1987-1990, there is a record of only one vehicular accident at the intersection of West Street South and Kitchener Street.

Mr. Russell produced letters from the County's Board of Education (Exhibit 36) and Roman Catholic Separate School Board (Exhibit 37). Both letters, dated October 1990, which are identical in content, indicate that there have not been any problems for the school bus routes caused by the movement of garbage trucks from the City or the Townships.

Mrs. Cooney pointed out that the type of waste practices adopted by the City will of course impact on the traffic level travelling to the landfill. For example, recycling depots scattered throughout the area would eliminate some of the trips which people would otherwise be required to take to the landfill.

The Board does not find it necessary to include any recommendation or condition with respect to landfill traffic.

22. Planning

Mr. Ciulini recommended that there be a comprehensive plan for waste reduction programs. Without a specific plan, you are unable to determine whether you are achieving your objectives. Mr. Ciulini stated that if a municipality does not already have a plan in place, it should be able to create one within six months.

Mr. Gray found the City's 3-R's implementation strategy (Exhibit 75) to be a reasonable approach. When asked by Mr. Russell whether he felt that more statistics and a more concrete program were necessary, Mr. Gray stated that he found the City's plan to be "a good draft of the various sections that should be addressed" (transcript vol. 9, p. 41).

Brian Murrant lives in the City of Orillia and is chair of WMAC, the City's Waste Management Advisory Council. The committee is comprised of people in business, medical and other professions, homeowners and a retired engineer. WMAC is a body of the City council, although no council members are on the committee. The committee first met six months before the hearing, and since then has had six meetings. It has met with groups such as CAN and WASTE NOT. WMAC will be sending recommendations to City council.

Mr. Murrant believes that WMAC will be an important and pivotal committee for City council. It is a single-issue body with far more time to listen to groups such as CAN and WASTE NOT than council could make available. At the same time, it has more access to council than any other group. A six month action plan has been suggested, and ultimately he hopes for one, three and five year plans to be put into place. When asked by Mr. Watt about WMAC's terms of reference, Mr. Murrant indicated that he did not feel hemmed in by its mandate. This includes the development of a mission statement, and during that process he believes WMAC will redefine its objectives. A part-time staff person has already been employed and a budget of \$12,000 per year was allocated by the City. As the budget was granted half-way through the year, he believes that it can and should be spent within the calendar year 1991. This would translate into an annual budget of \$24,000.

Mr. Wilkins complained that there was no planning for waste issues in the City. When programs do appear, they seem to be too little, too late.

In her testimony Mrs. Cooney stated that she wanted to see educational principles applied to the waste management field. This would require predetermined goals and the means of implementing those goals.

Ms. van de Valk found the diversion program of the City reactive, rather than proactive. There was no plan or co-ordinated approach. In her view, a waste minimization strategy is needed. A plan would pull all of the separate programs together and help the parties proceed forward. She indicated that the City is now at a cross-road, and needs a plan in order to proceed more effectively. The 3-R's and composting programs have been delayed, in her view, because of the focus on, or distraction with, the solid waste management master plan process. She referred, for example, to the P&R Report (Exhibit 19) which indicated that the 3-R's program is in its "early stages of development" (p. 14).

She was critical of the record-keeping by City staff. Her report referred to several occasions where estimates based on different reporting sources varied widely. For example, she compared five documents filed by the proponent which used different terms for the same program, namely on-site composting: "leaf", "yard waste", "leaf composting", "leaf grass composting" and "leaf yard waste". Categories of programs must be clearly defined, for the benefit of generators and so that record-keeping does not become confused. Planning cannot be effective if the data used is inaccurate. Most (60%) of the City's diversion data was based on estimates only. Estimates are not a good basis upon which to build a program. More effort at monitoring and evaluating would be appropriate.

It was her view that the City has no method of evaluating what is going into the waste stream. Study of the participation rates (that portion of the total population which participates in the blue box program) is important to help find weaknesses in the program, and to learn where development and education are necessary. Ms. van de Valk was concerned about the lack of accurate information about participation rates and capture rates (that portion of all recyclable material which is picked up in the blue box program). Municipal staff were using original estimates to determine participation and capture rates. Experience in other municipalities has shown that early estimates were unrealistic. Waste composition studies have shown that the capture rate, at best, is about 66%, which means that a large quantity of recyclable material is being landfilled.

She referred to Mr. Peel's witness statement (Exhibit 70) which discusses priority programs (at p. 5, par. 7). It indicates that extending the blue box program, curbside collection of yard waste and wet waste, and composting programs are under consideration. Ms. van de Valk felt that what was required by the City is a plan into which the prioritization of these various programs could be placed. The City would require a framework, with targets and criteria, in order to decide whether any component should be included in the plan. The City would also need to consider its limited available resources and the demands that different programs will have on those resources. More information than is currently available would be necessary to determine the amount of diversion that would be achieved if such a plan was implemented.

With respect to the leaf policy, for example, she questioned whether the City had determined where the leaf program fit into its overall policy. What would be the most cost effective method of collecting leaves? Has the City been evaluating various methods of collection? With respect to composting, she questioned whether the City had explored all of the issues and alternatives, including the removal of garbage bags and unacceptable debris. She raised issues such as citizens having an opportunity to collect compost for their own use, means of producing high quality compost, shredding techniques and testing for contaminants.

To Ms. van de Valk, these unanswered questions pointed out the lack of methodical planning and evaluation processes.

The Board accepts Ms. van de Valk's evidence. The City's current programs have certainly brought it a long way in a very short time. Planning and evaluation must now be incorporated into the City's approach to its waste management programs. We note that WMAC appears to have no elected officials or city staff as members, contrary to the third recommendation in the City's July 1990 Statement of Position. This issue has been addressed in conditions 15-19.

23. Education

In his witness statement, Mr. Ciulini described this component of the province's waste reduction action plan:

Public outreach and education are a cornerstone of the program. The initiative is to provide information, education, training and technical assistance on waste reduction to schools, municipalities, industries and householders. (p. 9)

During cross-examination by Mr. Watt, Mr. Ciulini agreed that education is an important component of the 3-R's program. Mr. Gray indicated that a citizens' advisory committee can be beneficial in assisting with the education of residents and school children. Mr. Marshall indicated that part of his department's current education program is word of mouth communication and newspaper notices.

Mr. Murrant indicated that for educational purposes WMAC has already started to arrange for notices to go out in the monthly bills to hydro customers. WMAC is looking for sponsorship from local businesses to aid in public education.

Mrs. Cooney was qualified to give opinion evidence as an expert in the field of education. Her written and oral testimony dealt with some principles of education which she viewed as helpful. In addition, she provided a variety of suggestions for activities that could assist in an educational program (Exhibit 89, pp. 4-5). She testified that with respect to all three municipalities, there does not appear to be any allocation in the budget for education. Yet her own material (Exhibit 90, p. 50) contains a memorandum from Mr. Peel, head of the landfill staff, dated September 1991, which indicates a 1991 budget of \$4,600 for advertising, and provides details of various educational and informational programs in which advertising was used.

Ms. van de Valk stated that an educational program is necessary now that a hazardous waste depot is in place, to encourage people not to acquire toxics or dispose of them. She was concerned that the existence of the depot may lead consumers to believe that it is safe to purchase goods containing toxic substances. The quantity of toxics used should be reduced. She was impressed that City staff had visited all schools in the area, and schools in the Townships as well.

Of the 103 municipalities which she surveyed, 53 published newsletters in addition to using radio and newspaper ads. In her view, these newsletters provide a better opportunity to describe programs and initiatives. Mississauga and Halton Region send out their newsletters four times/year. Of the selected smaller townships she examined, 9 out of 14 send out residential newsletters. She stated that the education of waste generators must be more thorough.

Ms. van de Valk suggested that the municipality should generate educational programs on reduction, as it has the primary responsibility for waste management. She had difficulty with the idea of the County undertaking this program because it has 28 municipalities. Each municipality might like to approach the issue in its own way. She agreed that it would be of assistance if the County prepared programs, as long as the individual municipalities were responsible for the delivery of them.

Mrs. Clune testified that business, industry and schools must be targeted. There must be ongoing education, with newsletters, videos, one-on-one meetings and presentations. As many people should be involved in educational programs as is possible.

The Board found the evidence from various quarters remarkably consistent with respect to the need for more education. In our view, this is an area for considerable expansion at the earliest opportunity. This issue has been addressed in condition 17(1)(ii).

24. Findings

As none of the parties was opposed to the service area expansion, the Board was left to consider whether approval would adversely affect the environment or the community. It is evident that there is considerable site life left, and that the waste from the Townships will not have a substantial impact upon the waste capacity of the landfill available to the City.

Some of the conditions discussed below deal with increasing waste diversion and reduction in order to further prolong the lifetime of the landfill. Other conditions deal with increasing planning and public involvement in the decision-making process as it affects waste management issues.

A considerable problem, in our view, is the location of the landfill itself. It is practically surrounded by water, and the nature of the flow of surface and ground water is such that leachate contamination is entering Lake Simcoe, and from there, Lake Couchiching. The stratigraphy of the site does not prevent the escape of leachate. To compound the problem, the

former landfill site, now Kitchener Park, located on the east of the current landfill, is also located on the shore of Lake Simcoe, and is undoubtedly leaking as well.

We heard evidence that waste has been landfilled in this area for more than 40 years. The feeling of many of the concerned citizens, who testified at the special evening session of this hearing, was that it is too late to turn back the clock. The waste is already in the ground. In their view, the current landfill should be operated as long into the future as possible, in order to avoid the problems that developing a new site will entail. We found it difficult to reconcile that community members would express deep concern about the impact of leachate contamination on the one hand, yet at the same time, propose the addition of more waste long into the future.

The Board is worried about the quality of the ground and surface water in and around the landfill. There was little expression of concern about this from the government parties at the hearing - the City, Orillia, Rama, the County and the Director, MOE. The government response, to the effect that the quality of landfill-contaminated ground and surface water is not as bad as the pre-existing quality of water in Mill Creek, Ben's Ditch and the discharge from the sewage treatment plant, provides no comfort for anyone concerned about the degradation of water quality in Lake Simcoe and Lake Couchiching. Mr. Usher confirmed this deterioration:

When I say the water quality in Lake Simcoe is deteriorating ... it is the entire lake that's deteriorating, its not just the mouth in here due to Ben's Ditch. You have other creeks and other outflows to the overall system of the lake. (transcript vol. 6, p. 109)

The landfill is not a facility which exists in isolation. Its contribution of contaminants most definitely adds to the level of pollution coming from other sources. Although the cumulative impact of all other sources is destructive on its own, the Kitchener Street landfill only compounds the problem. In our view, it would be contrary to the public interest to approve the service area expansion without requiring some remedial action. Some of the conditions discussed below, including 15 and 22, attempt to deal with this problem.

Subject to the conditions of approval found in Schedule A hereto, the Board approves the extension of service to the two Townships for the period concluding February 28, 1997.

25. Discussion of Conditions

This section is divided into two parts. First, the conditions which have been approved by the Board are discussed, along with the rationale for these conditions. In the second part, conditions which were proposed by one or more of the parties, but which were not accepted by the Board, are discussed.

During argument, there were three separate drafts of proposed conditions, presented by the parties, which framed the issues between them:

Exhibit 97	-	filed by CAN	-	21 paragraphs
Exhibit 99	-	filed by Waste Not	-	25 paragraphs

Exhibit 105 - filed by the Director - 16 paragraphs

The Board's conditions follow the order and numeration in Exhibit 105, up to and including par. 14. In determining the content of the approved conditions, we considered the competing versions offered by the parties, and the divergent and often conflicting evidence and argument offered to support them. We attempted, where possible, to draw from the various proposals presented in each of the three drafts.

(a) Approved Conditions

Schedule A, attached to these reasons, contains the 22 conditions which were approved by the Board.

Conditions 1-3, 4-6, 10, 13 and 14:

There was no controversy between the parties with respect to the inclusion of these conditions which are based upon the Director's proposal.

Condition 7:

No liquid industrial wastes or hazardous wastes shall be disposed of at the landfill.

Under the terms of its 1986 certificate, the landfill can receive only "domestic, commercial and solid non-hazardous industrial waste". CAN proposed (Exhibit 97, par. 4) that the following list of restrictions, contained in a written agreement between the City and the Townships, be included:

... liquid wastes of any description, hazardous wastes, sludges, dead animals or animal remains, manure, explosives or inflammable materials, nuclear wastes, burning or smouldering ashes or cinders or other materials having a temperature greater than 80 degrees celsius and ... any other materials which the City may from time to time declare to be unacceptable.

Waste Not makes a similar request (Exhibit 99, par. 1-3), but includes also "hazardous", "radioactive" and "corrosive" materials. The government parties were opposed to the inclusion of these specific restrictions. For one thing, it is confirmed in the agreement of the municipalities. However, should they wish to alter their agreement in the future, due to changed circumstances, they would be unable to do so if these terms are included in a condition of a certificate. As Mr. Russell put it, "to define confines" (transcript vol. 13, p. 218).

This of course is the very reason why the other parties want these provisions included - to prevent any future change in the agreement. It was pointed out by Mr. Russell that applying for changes to conditions is an expensive and difficult process. Mr. Green submitted that many of the proposed items are acceptable for landfilling under current law, and should not therefore be prohibited through the imposition of a condition. Mr. Glass submitted that the Director would not have the power to prohibit the acceptance of waste which is permitted by the regulations. Accordingly, the Board would not have that power either. We do not accept this

argument. If the Board did not have the authority, in formulating conditions, to go beyond existing statutory and regulatory controls, then its power to impose conditions would be very limited, and the value of site specific hearings would be greatly diminished.

Mr. Glass indicated that liquid and hazardous wastes, explosives, flammable materials and nuclear wastes are already prohibited. Sludge, depending upon its nature, may not be. Animal remains and manure are permitted. Burning or smouldering ashes may be hazardous, depending on their nature.

Many terms were used by the parties without resort to available definitions. It would have been helpful if the meaning of these terms had been developed by the parties. Reg. 309, deals with waste management. It defines some of these terms in s. 1.

27. "hazardous waste" means a waste that is a,

- i. hazardous industrial waste,
- ii. acute hazardous waste chemical,
- iii. hazardous waste chemical,
- iv. severely toxic waste,
- v. ignitable waste,
- vi. corrosive waste,
- vii. reactive waste,
- viii. radioactive waste, except radioisotope wastes disposed of in a landfilling site in accordance with the written instructions of the Atomic Energy Control Board,
- ix. pathological waste,
- x. leachate toxic waste, or
- xi. PCB waste as defined in Ontario Regulation 11/82,

and includes a mixture of acute hazardous waste chemical, hazardous waste chemical, hazardous industrial waste, pathological waste, radioactive waste or severely toxic waste and any other waste or material, but does not include,

- xii. hauled sewage,
- xiii. waste from the operation of a sewage works subject to the *Ontario Water Resources Act* where the works,
 - A. is owned by a municipality, ... or
 - C. receives only waste similar in character to the domestic sewage from a household;

48. "pathological waste" means,

- i. any part of the human body, including tissues and bodily fluids, but excluding fluids, extracted teeth, hair, nail clippings and the like, that are not infectious,
- ii. any part of the carcass of an animal infected with a communicable disease or suspected by a licensed veterinary practitioner to be infected with a communicable disease, or
- iii. non-anatomical waste infected with communicable disease;

55. "severely toxic waste" means a waste that contains a contaminant listed in Schedule 3 at a concentration greater than one part per million.

The term "toxic" is not defined in the EPA or Reg. 309. The *Dictionary of Canadian Law* (Carswell, 1991) defines toxic as "acting as or relating to poison". Mr. Glass submitted that some toxic waste is permitted in a landfill.

The municipalities have provided for most of the above exclusions in their agreement. No such restrictions are specified in the City's 1986 certificate. As has been indicated earlier, the hazardous waste depot should be used for all toxic materials. Although we have decided not to include in the conditions these additional restrictions, condition 17(1)(i)(b) does include toxic substances in the goals for the waste minimization plan.

With respect to Mrs. Cooney's proposal to add hazardous and radioactive materials, it is our understanding that the landfill would not knowingly accept same. Neither is permitted under EPA regulations. As to corrosive materials, the problem is somewhat different. Although this term was not defined by Mrs. Cooney, or any other party, we understand this to refer to substances like acid and salt which would tend to corrode other materials. The term "corrosive waste" is defined in Reg. 309:

10. "corrosive waste" means a waste that,
 - i. is aqueous and has a pH less than or equal to two or greater than or equal to 12.5 as determined by a Ph meter, or
 - ii is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 millimetres per year at a test temperature of 55° Celsius using test NACE TM-01-69 or an equivalent test approved by the Director.

It is our understanding that such materials would not be knowingly landfilled. The hazardous waste depot at the landfill would be used to store such materials until they could be shipped away for proper treatment. The depot is not restricted to the handling of hazardous wastes, as defined in Reg. 309. The October 1990 certificate (Exhibit 45) identifies the use of the depot for any household waste that may require "more than the usual care in ... disposal". In our view, this term includes anything that is toxic.

In par. 3, Mrs. Cooney proposed the addition of the following provision with respect to this issue:

An immediate ban shall be put into effect on the admission to the Kitchener Street Landfill Site of all hazardous, toxic, deleterious or contaminated substances.

Hazardous waste is dealt with in condition 7. The term "deleterious" is not defined in the EPA or Reg. 309. "Contaminant" is defined in s. 1(1)(c) of the EPA:

"contaminant" means any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that may cause an adverse effect.

In the event that Mrs. Cooney's reference to contaminated substances relates to material received at the landfill pursuant to an order of the Minister made in accordance with s. 85 of the EPA, this subject is dealt with in condition 19.

The term "deleterious" is defined in the *Dictionary of Canadian Law* as "harmful". "Deleterious substance" is defined in s. 34 of the federal *Fisheries Act* as a substance which, if added to water, would degrade the water so that it is harmful to fish or fish habitat.

The concern of the government parties, who object to this proposal, is that the issue of definitions can become a serious problem. There could be heated debate about whether everything which is put into a landfill is in some way harmful or injurious to plant and animal life. We agree with the position of the government parties that these terms are too general and subjective to be employed in a condition without adequate definition.

Condition 8:

No waste shall be burned at the landfill.

CAN proposed (in par. 6) that this provision should go further and state that "incineration shall not be an option for study to deal with managing waste". Waste Not supported this proposal. In April 1990, the City had engaged in negotiations with a U.S. firm, Ogden Martin Systems Ltd., to build a large (\$500 million) commercial EFW facility in the community. Its primary source of fuel would be waste from the Metropolitan Toronto area. More than 300,000 tonnes of waste would be burned daily. CAN, originally named Stop Incineration Now (SIN), was formed to fight this project.

There was considerable negative reaction in the community. The City retreated. In its July 1990 Statement of Position (Exhibit 102) City council announced that it would "inform Ogden Martin that we will no longer consider its proposal to handle the G.T.A. [Greater Toronto Authority] waste but may at some future date consider a more localized proposal". CAN and Waste Not continue to fear that the City will continue to explore the feasibility of an incinerator project. They wish to prevent that from occurring.

Mr. Watt conceded that little evidence was led at the hearing dealing with the benefits and problems of incineration as a means of waste disposal. Although the Board was advised that government policy is currently opposed to incineration as an alternative, the government parties nevertheless did not want future consideration of this alternative prohibited by a condition. They argued that government policy may change one day. New technology might appear.

We have not included CAN's proposal in the condition. In the referral from the Director, the Board was not assigned the task of reviewing the long-term solid waste master plan process. Even if we could consider the merits of this proposal, there has hardly been the type of evidence before us upon which we could make a determination about this issue.

Conditions 9 and 11:

- 9(a) The City shall continue the ground water monitoring program described in the report by Gartner Lee Limited entitled *Hydrogeological Site Assessment and 1989 Monitoring Report*, dated June 1990 and revised November 1990 ("the hydrogeology report"). The ground water monitoring frequency shall be that set out in the report by Gartner Lee entitled *1990 Monitoring Final Report* dated July 1991 ("the Monitoring Report"), subject to any changes directed or approved by the District Officer after the release of the decision.

- (b) Ground water samples shall be analyzed for, but not limited to, the following parameters: pH, electrical conductivity, hardness, alkalinity, chloride, sulphate, phosphorus, phosphates, phenol, ammonia, nitrate, nitrite, TKN, iron, COD, DOC, DIC and such other parameters directed or approved by the District Officer from time to time. Water level elevation shall be measured in all monitoring wells during each sampling round. The District Officer shall approve any changes to the ground water monitoring program after the release of the Board's decision.
- (c) Ground water samples from those monitors located in the buffer zone surrounding the fill area shall be analyzed throughout the 1992 testing program for mercury, in order to ensure that there are no exceedences of the Canadian Water Quality Guidelines or the Provincial Water Quality Objectives at the landfill property boundary.

CAN proposed (Exhibit 97, par. 7) that volatile extractable organics be included in the above list of parameters. Waste Not supported this. The government parties were opposed. However, volatile extractable organics were included in condition 11, which was a late addition on behalf of the Director. Mr. Gray indicated that testing for extractable VOC's is being included in all new certificates issued by the Director. It is a complete scan for about 23 or 24 substances. Mr. Gray explained that he has found xylene, benzene and toluene (VOC's which do not break down anaerobically) in the leachate of most landfills. Testing for extractable VOC's will detect movement off-site of both the compounds that do and do not break down anaerobically. Mr. Watt, CAN's counsel, appeared content with condition 11:

- 11 In addition to the above monitoring programs, the City shall obtain ground water samples from locations 11-I, 3-II, 27-II, 21-II, 1-III and 14-III, and surface water samples from locations S3, S7, S8, S10 and S13 during the spring and fall 1992 monitoring programs which shall be analyzed for volatile extractable organics. The District officer may in his discretion from time to time discontinue, modify, extend or renew the volatile extractable organics monitoring program.

CAN also proposed (Exhibit 97, par. 10) further sampling to occur at two different locations bi-annually to be tested for the following additional parameters:

- 1. General Chemistry: total organic carbon (TOC) and biological oxygen demand (BOD).
- 2. Indicator parameters: sodium, potassium, magnesium, calcium, bromide, sulphate, bicarbonate and the charge balance error (%).
- 3. PWQO Parameters: all PWQO parameters including all heavy metals, ammonia, cyanide and total phosphorus.
- 4. Organic Chemicals: volatile organic chemicals (VOC), polyaromatic hydrocarbons (PAH), PCB's, pesticides, herbicides and EPA base, neutral and acid-extractables.

The Board has included mercury in condition 9(c) as a result of the sampling in the summer of 1991 indicating substantial exceedences of the Canadian Water Quality Guidelines within the fill area. With respect to item 1, BOD is included in condition 10 which deals with surface water sampling. Sulphate in item 2 has been included in condition 9(b). Total phosphorus was included in item 3, although phosphorus is found in condition 9(b). Mr. Gray indicated that the

parameters included in conditions 9(a), 9(b) and 11 are sufficient, as compared with the above list of CAN:

The pesticides and herbicides are not on that list. They have listed here the EPA based neutral and acid extractables. We are only doing the acid extractables, so the base and neutral won't be listed. Really, it is a totally different scan that is on here ...

There is some minor overlap on some ... things ... [O]ur scan has some of the chlorinated hydrocarbons in it. It does not have the polyhydrocarbons in there. ...

Some of the chlorine, yes, some no. No PCB's and herbicides. I am certain we don't have the pesticides and herbicides in that site. (transcript vol. 9, p. 39)

Mr. Glass indicated that sufficient indicator parameters have been included in conditions 9(a), 9(b) and 11 to ensure that any negative trends will be detected. If no changes are found in these parameters, the site is continuing to perform as expected:

[I]t is not necessary to have every possible thing tested for in order to determine that the site is performing properly, in my submission. (transcript vol. 14, p. 37)

If changes are detected, then the District Officer would respond by directing that additional tests be conducted.

Mr. Green raised as a general objection to CAN's proposals, the fact that no witnesses were called to contradict the proponent's scientific evidence. As a result, he submitted as a general proposition, that the Board was bound to accept all of the proponent's evidence and reject all of CAN's proposed conditions in this area. He did not cite any authorities to support this submission.

In *Best Rank Investments Inc. v. Tenants of 3161 Eglinton Ave. East*, (1990) 73 D.L.R.(4th) 371, an appeal by a landlord with respect to a residential rent increase, the Ontario Divisional Court made the following observation:

In our judgment, the tribunal was entitled, from its own experience and knowledge, to hold that that [interest] rate was unreasonable in the circumstances to which it referred. A finder of fact is under no obligation to accept the evidence adduced by a party, if it finds that evidence to be unreasonable, even though there is no evidence to the contrary. (pp. 373-4)

In *NSP Investments Ltd. v. Ontario (Joint Board)*, (1990) 72 O.R. (2d) 379, the Divisional Court dealt with a judicial review application from a joint board decision under the EAA. One of the allegations made was that the board "rejected or ignored the uncontroverted expert evidence of all witnesses" on the hydrogeological suitability of a landfill site. In its reasons the court stated at p. 383:

Hydrogeology is not an exact science ... While the board should not lightly reject or differ from the opinions of experts, its duty was to consider the health and safety of the public. It had the obligation to review the evidence and reach its own conclusion.

We disagree with Mr. Green's proposition. The Board ought to critically evaluate the evidence it receives before making a determination, particularly in an area such as hydrogeology. This view is supported by the following comment of Mr. Usher, made during his cross-examination by Mrs. Cooney:

Hydrogeology is a science that is becoming more exact with time, but has been in infancy, much the same as engineering was 100 years ago. (transcript, vol. 6, p. 36)

On the other hand, CAN chose to withhold a report which it obtained from a hydrogeologist prior to the hearing. Presumably, the report was based upon an analysis of the proponent's reports. The Board reluctantly dismissed an application brought by the proponent (supported by the County and the Director), at the outset of the hearing, to compel CAN to produce the report, on the basis that the report was privileged. Mr. Watt had undertaken that he would not call his hydrogeologist as a witness.

CAN must face the legacy of withholding that report. An inference arises that the findings and conclusions in the report supported the proponent's position, otherwise we would expect that CAN would have been eager to file the report. During argument of the motion, Mr. Watt made the following comment:

I appreciate that this is a legalistic approach, but I really do feel penalized in the event that I have to, in effect, provide grounds for Mr. Russell to potentially improve his case. (transcript vol. 1, p. 69)

The principle which would entitle the Board to draw a negative inference against CAN is articulated in *The Law of Evidence in Civil Cases* by Sopinka and Lederman (1974):

[T]he failure of a party or a witness to give evidence, which it was in the power of the party or witness to give and by which the facts might have been elucidated, justifies the court in drawing the inference that the evidence of the party or witness would have been unfavourable to the party to whom the failure was attributed. ...

The rule is not restricted in its application to the plaintiff or other party who has the ultimate burden of proof. Failure on the part of a defendant to testify or to call a witness, once a *prima facie* case has been made out against the defendant, may be the subject of an adverse inference. While such failure will not, in itself, fill a gap in the case of the party who has the burden of proof, when sufficient evidence has been produced by the latter, so as to create a secondary burden on the opposite party, failure by such party to testify or to call on a witness strengthens the case against him.

The party against whom the inference operates may explain it away by showing circumstances which prevented the production of the witness. (pp. 535-7)

No circumstances were advanced by Mr. Watt for refusing to file the report other than the defense of privilege. The government parties were not demanding that CAN's hydrogeologist be called, but only that the report be filed.

In final argument, Mr. Watt agreed that the inclusion of volatile extractable organics in condition 11 "goes a long way to satisfy the initial concerns of our group" (transcript vol. 14, p. 77). He

also indicated that "there are significant overlaps in some of the other parameters which are listed within this particular recommendation". Under the circumstances, and given the evidence before us, including the cross-examination of the two experts, we are not satisfied that the additional testing which was proposed would prove to be of significant value.

Condition 12:

Before disposing of waste in Cell 6, the portion of the sanitary sewage line that connects the existing sanitary sewage line at the Huronia Regional Centre to the Sewage Treatment Plant shall be properly decommissioned and all appropriate measures taken to prevent the egress of leachate either through this sewage line or the backfill material around this sewage line.

Mr. Watt proposed (par. 15) an addition to this condition to require that "proper alternative arrangements shall be made to redirect the sewage previously flowing through the said sewer to an approved sewage system". Mr. Russell informed the Board that in 1989 the Huronia facility was connected to a new facility on Memorial Avenue and no longer uses the old sanitary sewer. For that reason, Mr. Watt's proposal is unnecessary.

Condition 15:

- (1) On or before August 31, 1992, the City, in consultation with Orillia and Rama, shall prepare a plan for the improvement of the water quality in Mill Creek and Ben's Ditch, in order to eliminate the impact caused by the landfill, and submit same to the District Officer for approval.
- (2) In preparing the plan the City shall consider the recommendations of the waste advisory committee, referred to in condition 16, the County and community members from the City and the Townships.
- (3) The plan shall ensure that the water quality between stations S7, S8 and S15 shall be improved to a level which, if the effluent from the sewage treatment plant was subtracted, would be equal to or better than the present water quality in Mill Creek west of station S7 and in Ben's Ditch north of station S8.
- (4) Implementation of the plan shall be completed on or before August 31, 1993.

This condition was not proposed by any of the parties. The Board became concerned, during the hearing, that no immediate effort was under way to improve the water quality in these two water courses. Dr. Zaltsberg knew of no studies. Mr. Gray indicated that the problem is rather complex:

The City of Orillia, or this end of the city, is basically built on foundries. Further to the north on West Street, there were quite a number of foundries at one time. Some of them have been demolished, but there was a foundry sand lagoon right on the shore of Ben's Ditch. There is also a landfill site, an industrial landfill site, on the shore of Ben's Ditch, and these are currently under investigation. ...

We have had testing done on that particular area up there and there is ongoing work still. That sewage plant itself has just recently been upgraded ... so we are anticipating better results from the sewage plant ... [A]t some point in time, if it becomes necessary, then there could be additional sewage

treatment required at the sewage plant as well. So it is quite a complex area flowing into Ben's Ditch. (transcript vol. 9, pp. 79-80)

Mr. Gray compared Ben's Ditch to a municipal storm sewer, although the old foundries located in the swamp land north of the landfill pose the additional problem of producing low levels of phenols. Although the MOE's M.I.S.A. program (Municipal Industrial Strategy for Abatement) is intended to deal with the elimination of the sources of contaminants entering storm sewers, very little progress has been made on the municipal side. Mr. Gray stated that the flow from Ben's Ditch was having a "fairly restricted impact" (p. 94) on Lake Simcoe. In fact, he believed that the water quality of Lake Simcoe is improving:

The main concern in Lake Simcoe is phosphorus. This is what the Lake Simcoe Strategy names as the major problem. And the impact of phosphorus on the lake is such that it causes eutrophication of the water body and loss of oxygen at greater depths, which is why we are losing some of the cold water fish. But the actual lake quality, I believe, from my last reading of the data, is showing marginal signs of improvement, as an overall body. (transcript vol. 9, p. 82)

He indicated that the source of the phosphorus is run-off, agricultural operations and sewage plants:

The main focus for the Ministry at this time is agricultural lands and point sources for sewage plants. (p. 94)

The water courses around the landfill site pick up surface and ground water which leaves the landfill site on its west, north and east sides. The direction of flow in the marshy area on the west side of the site is to the north toward Mill Creek. The site is virtually surrounded by water. Ground water leaves the site in all directions, according to the ground water flow arrows found at figure 6 of Exhibit 55, a report from Gartner Lee, dated July 1991 and entitled 1990 Monitoring Final Report. A copy of this figure is reproduced at Appendix 7 to these reasons.

The evidence establishes that Mill Creek and Ben's Ditch receive contaminants from several sources in addition to the landfill. For example, the large quantity of discharge from the sewage treatment plant enters Ben's Ditch directly. The combined water courses empty directly into Lake Simcoe, beside the landfill, and six miles by water from the intake pipe of the City's water filtration plant. When asked by Mrs. Cooney about the advisability of allowing the landfill to add even further to the substantial loadings from other sources, Mr. Usher replied as follows:

[I]t would be my opinion that you would go after the bigger contributor and you would not focus on a very small contribution. You would try to, in those watersheds, improve management practices. That would be a far more productive avenue. (transcript vol. 6, p. 65) ...

I think there are many examples of far ... greater loadings going into this lake which should be addressed first as opposed to looking at the two and a half litres per second that comes from this landfill. (p. 97)

The expansion of the service area of the landfill increases the concentration of leachate contaminants entering Mill Creek, Ben's Ditch and Lake Simcoe. This in turn increases the loading of contaminants in those water bodies. In our view, it is unacceptable for the three

municipalities, the County and the Director, to permit the continuation of this landfill-related source of pollution. Even if the landfill's relative contribution to the degradation of these surface waters is not great, it nevertheless increases contaminant loadings therein.

In the Ontario District Court decision of *R. v. Falconbridge Nickel Mines Limited*, (1982) 11 C.E.L.R. 136, the accused was convicted at trial of offences under the *Ontario Water Resources Act*, R.S.O. 1980, c. 361, of causing a discharge of contaminated mine water from a tailings pond into a nearby lake which was even more contaminated. The accused argued unsuccessfully at trial and on appeal that the less contaminated mine water would not impair the quality of the lake water. The trial judge found that adding even less polluted water to the lake would still add an extra loading of pollutants so that "more time will be necessary to bring the Fecunic Lake back to its pristine state" (p. 140). He referred (at p. 139) to an excerpt from a 1907 decision from England, *Staffordshire County Council v. Seisdon Rural District Council*, which aptly describes our concern with the failure of the government parties to take steps:

According to the judgement of the King's Bench it must not be said, "see what a lot of filth other people put into it, and therefore you must excuse us", because that leads to this logical conclusion, that you must proceed at once against all the people or against none, because everyone could make that answer, and the river would not be purified at all.

Appendix 8 to these reasons is a copy of a table from the hydrogeology report (Exhibit 54) at p. 40(b). The data reveal that at the 14 monitoring stations included in the table, there are exceedences of the Provincial Water Quality Objectives (PWQO) or Ontario Drinking Water Objectives ("ODWO") for four parameters (unionized ammonia, iron, phenol and chloride).

With respect to such exceedences, Mr. Usher's witness statement includes the following observation:

Surface water quality has been judged in comparison to the [PWQO] for Ontario. Almost all parameters meet the [PWQO] at all surface stations. Where the [PWQO] are not met, it is not due to the landfill, but to background water quality. (p. 5)

Dr. Zaltsberg's witness statement (Exhibit 80) contains the following comments with respect to exceedences:

All shallow downgradient monitors show varying degrees of the leachate related contamination. ... Concentrations for several leachate related parameters significantly decrease with distance from the fill area ... Despite this decrease, concentrations for phenols, DOC, organic N and Fe exceed the Ontario Drinking Water Objectives at or near the site boundary. However, concentrations for the same parameters exceed the ODWO in the background monitors 1 and 18 and, therefore, the overall adverse impact of landfilling operations on the shallow ground water quality at and beyond the site boundary is minimal. (p. 4)

With respect to surface water exceedences, his statement includes the following observations:

All parameters with the exception of phenols meet the [PWQO] at all surface water monitoring stations along the lake shore. Elevated (above PWQO) concentrations for phenols are observed at all stations, including the background station S10 and the offshore station S14. Apparently, these concentrations characterize the regional rather than the local water quality in Lake Simcoe.

The degraded water quality at S15 at the mouth of Ben's Ditch is attributed to the significant discharge of the contaminated water from the ditch, but not to landfilling operations. (p. 5)

Policy two in the booklet entitled *Water Management: Goals, Policies and Implementation Procedures of the Ministry of the Environment* ("the blue book"), revised in 1984, dealing with surface water quality management, states:

Water quality which presently does not meet the Provincial Water Quality Objectives shall not be degraded further and all practical measures shall be taken to upgrade the water quality to the Objectives. (p. 5)

The blue book describes when water quality fails to comply with the PWQO:

Areas with quality worse than the Objectives will be so designated if one or more of the Objectives are not met. (p. 13)

In this case more than one of the objectives has not been met, and policy two appears applicable. In such cases, the blue book indicates what steps should follow:

Evaluations of existing conditions in problem areas shall be conducted and remedial measures shall be taken to upgrade water quality to the [PWQO] as stipulated under Policy 3. The Ministry will require that all reasonable and practical measures be taken to reduce waste loadings. Where new or expanded discharges are proposed, no further degradation will be permitted and all practical measures shall be undertaken to upgrade water quality. (p. 14)

Ground water quality management is also discussed in the blue book and, as well, in policy 15-01 (1986) of the MOE Policy Manual. In the section dealing with regulated sources of contamination, such as a landfill, the policy states:

As a general policy, water quality degradation will be controlled in order to protect reasonable uses, existing or proposed, of both ground and surface waters. ...

The treatment or elimination of pollutants from existing activities will be required where it is demonstrated that such measures are practicable and necessary to correct use impairment and will prevent further degradation or improve water quality. (p. 4)

Dr. Zaltsberg indicated that there are no wells down-gradient from the landfill, and therefore the MOE's reasonable use policy would not apply. However, the stated goal of the MOE in ground water quality management is "to protect the quality of ground water for the greatest number of beneficial uses" which includes the protection of aquatic life "where ground water is a significant component of stream flow" (p. 7 of the blue book). The ground water affected by the landfill is entering the water bodies surrounding the landfill. Lake Simcoe provides drinking water, recreation and habitat for aquatic life.

Condition 15(3) requires that the water quality not be degraded between S7/S8 and S15 because of the landfill. It would of course be open to the City to take steps to improve water quality upstream of S7 and S8, in order to achieve the objective of water quality improvement, recognizing the separate impact of the sewage treatment plant.

It is hoped that the preparation and release of the report required by condition 15 will stimulate a productive examination of this problem and a solution.

Condition 16:

The City, in consultation with Orillia and Rama, shall establish, fund and maintain a waste advisory committee ("committee") which will incorporate, as a minimum, the following features:

- (i) The committee's mandate is to advise and assist the three municipalities in
 - (a) the preparation and implementation of an Area Waste Minimization Plan,
 - (b) improving the operation and management of the landfill,
 - (c) reviewing all action plans with respect to waste management which are under consideration by any of the municipalities,
 - (d) advising the three municipalities on all issues relating to waste management, and
 - (e) such other waste management matters that may from time to time be referred to it by the municipalities.

In the exercise of its mandate the committee shall consult widely with local community and interest groups throughout the area.

- (ii) Membership on the committee will come from local community and interest groups (including a representative from each of Citizens Acting Now and Waste Not, if available), the business sector and municipal government (staff and elected representatives).
- (iii) The committee's members will be appointed by the City council after each municipal election.
- (iv) The committee shall be comprised of no less than 8 members at any time.
- (v) Adequate funding shall be allocated to the committee on a regular, budgetary basis.

This condition is based upon par. 16 of the Director's proposal, par. 18 of CAN's proposal, and par. 8, 9, 10, and 24 of Waste Not's material. It is not necessarily intended that this committee be in addition to, or in the place of, the committee currently constituted, namely WMAC. It may well be that WMAC will adopt the role described in this condition. In order to clarify Mr. Green's concern, the words "waste advisory committee" in condition 16 are intended to be descriptive only, and not to prescribe a particular name for this committee.

CAN had proposed (Exhibit 97, par. 16) a condition requiring the City to rename WMAC in order to reflect the philosophy that waste should be seen as a resource. Hence, the name Resource Management Committee was proposed. Waste Not took the same approach in par. 7 of its material. The government parties resisted this, and submitted that the City and its committee should be left the flexibility to determine the actual name. The Board agrees.

CAN wanted this committee to have decision-making power. Waste Not agreed. In its proposal (Exhibit 97, par. 10), the committee would be part of a decision-making team which would also include elected officials from the three municipalities, the landfill superintendent and the landfill employee in charge of waste reduction. In his witness statement Mr. Gray identified a potential problem with a committee that has decision-making power:

I was involved, a number of years ago, in discussions with residents of Maidstone who wished to have voting responsibilities on the Waste Management Committee along with elected officials. A problem was identified at that time because elected municipal officials do have protection against personal liability should problems occur at the waste disposal site, whereas private citizens acting on those committees would not have that protection. This is a matter which should be carefully reviewed before citizens are allowed to participate on a decision making-body with duly elected officials of Council. (p. 4)

Mr. Russell agreed that the role of a committee has become far more important. There is a great deal of specialized information which the City council does not have the time to explore in depth. A committee is better suited to do this. He also felt that the committee should "encourage wide public participation prior to making significant recommendations to council" (transcript vol. 13, p. 209) but he did not want to see this process incorporated into a condition.

Mr. Green suggested that to have a committee serve as a buffer between "interested citizens" and City council was "a wonderful idea" (transcript vol. 13, p. 247). He was concerned, however, about members of this committee having conflicts of interest, because of their business activities in the field. As an example, he did not think that the Clunes should be on the committee because CAN's plastics recycling operation makes them stakeholders in the process:

I think stakeholders in that kind of a situation should be resource people. They should not be the decision-makers. They should not be the recommenders, because their opinions are going to be, I won't say poisoned, but at least influenced by their own self-interest. (transcript vol. 13, p. 237)

Ms. van de Valk testified that she would like to see people such as municipal politicians, Messrs. Peel and Marshall and waste generators (domestic and ICI) on the committee. In answer to questions by Mr. Green, Mrs. Clune indicated that those involved in recycling, including CAN, should also be entitled to serve on the committee, as long as they have something useful to contribute.

As is clear from condition 16(ii), we agree that stakeholders are very desirable candidates for membership on this committee. In light of the commendations given to Mrs. Clune during the hearing by Messrs. Watt and Russell, and the evidence of her continuing efforts, we find it regrettable that City council denied her application for membership in WMAC. We believe that she would be a valuable addition to the committee.

With respect to decision-making power on the part of the committee, we are not persuaded that this is necessary or advisable at this time.

Condition 17:

- (1) On or before May 31, 1992, the City, in consultation with Orillia and Rama, shall prepare a five-year area waste minimization plan ("the plan") and submit it for review by the MOE Waste Reduction Office and approval by the District Officer. The plan will include, as a minimum, the following features:
 - (i) A statement of goals, to include that

- (a) all waste received at the landfill will be sorted;
 - (b) no toxic substances will be landfilled;
 - (c) no reusable, recyclable or compostable materials will be landfilled.
- (ii) A multi-dimensional, community-wide and sustained public education program which will promote the goals.
- (iii) A phased plan with specific target objectives including
- (a) sorting and separating at source;
 - (b) reduction, reuse and recycling;
 - (c) household and municipal composting;
 - (d) a community resource centre, and
 - (e) the strategic use of bans on materials such as cardboard.
- (iv) The requirement for a regular periodic evaluation of all aspects of the plan.
- (2) In preparing the plan the City will consider the recommendations of the committee, the County and community members from the City and the Townships.

This condition, as well as number 18, was developed from par. 15 of the Director's proposed conditions, par. 17 and 19 of CAN's, and par. 6, 12, 14, 15, 16, 17 and 25 from Waste Not's material. Mr. Russell informed the Board that a waste minimization plan should be at the top of the list for the committee to develop. However, he did not think that this priority should be included in a condition. Nor did he want the City obliged by a condition to consider the views of the committee and the public. He was concerned about a "hornets nest of interpretation" (transcript vol. 13, p. 216) and an endless series of briefs and representations to be considered.

On the other hand, Mrs. Cooney testified that she had been unable to obtain permission to appear before the City council or the County's Environmental Services Committee to make submissions.

Mr. Green expressed strong opposition to the idea that such a condition would oblige City council to consider the recommendations of concerned citizens. It was unclear to the Board how such a provision would impact upon his client, the County.

Mr. Glass, to the contrary, submitted that the City should consider the recommendations of the committee as well as representations from the public, the Townships and the County:

[I]t is essential that the public have some input and it should be beyond the nine people on the committee. If there are others who wish to have input, then they should be given that opportunity.
(transcript vol. 14, p. 27)

During cross-examination by Mr. Watt, Mr. Ciulini testified that his department would support an aggressive ongoing educational campaign and wide-ranging public consultation as part of a plan. He agreed that these components should be included in a condition of approval.

In CAN's version (par. 17) approval would be required from the MOE Waste Reduction Office. Mr. Glass pointed out that this branch does not operate as an approval-granting regulator. For

this reason, review by the WRO appears to be more appropriate. Mr. Russell was concerned about the inclusion of any reference to the WRO in the condition. However, Mr. Glass indicated that any funding programs would involve the WRO in any event.

CAN (Exhibit 97, par. 17) and Waste Not (Exhibit 99, par. 14 and 16) both wanted education included as a specific mandate in the plan. The government parties were opposed to this, indicating that this condition should include only planning requirements, not substantive components. Mr. Glass submitted that only process matters should be included, not the nature of the programs. He indicated that the City must make the decision as to the actual programs, and stated that neither the Director nor the Board could impose programs upon the City. He gave as his reason the fact that the City could not be compelled to implement such a program. By-laws would be needed to start a program, and only the City can pass them.

While it may well be desirable to have the City select and develop programs on its own initiative, we know of no legal impediment to a condition which requires them to do so. It appears that there may be some misunderstanding about the effect of conditions. In our view, conditions of approval imposed by the Board do not require compliance. That would be for the City to decide. However, the approval of the expanded service area is contingent upon compliance with those conditions. If the City chooses not to comply with them, it forfeits the approval.

In our view, education is an essential ingredient in the process and should be identified in the plan. However, condition 17 does not include the educational objective of developing a "conservator society", as proposed by Waste Not in par. 15.

Waste Not proposed (Exhibit 99, par. 12 and 14) a shorter period of time for the formulation of a long-term plan and an education plan, namely two months. We did not believe this would be realistic.

Mr. Green advised the Board that he found it most objectionable that the parties "should slavishly set goals" in the plan, as he believed that the City's *ad hoc* programs were achieving the goal of diverting waste. However, he voiced no objection to the setting of priorities in the plan.

Condition 18:

- (1) The City, in consultation with Orillia and Rama, will prepare a waste minimization strategy ("the strategy") with respect to the plan referred to in par. 17 above. The strategy will include, as a minimum, detail with respect to the following information:
 - (i) all financial, technical and human resources necessary for the implementation of the plan;
 - (ii) the timetable when each component of the plan will become operational;
 - (iii) the amount of solid waste reduction and diversion (re-use, recycle and compost) which is projected for each component of the plan;
 - (iv) details of how the implementation of each component of the plan will be managed;

- (v) methods and frequency of monitoring the progress of implementation of each component of the plan;
 - (vi) procedures for assessing new or unforeseen opportunities.
- (2) In preparing the strategy, the City will consider the recommendations of the committee, the County and community members from the City and the Townships.

This condition was developed from par. 15 of the Director's material, par. 17 of CAN's proposal and par. 11, 13, 18, 21, 22 and 23 of Waste Not's draft. Sections (i) through to (v) were proposed by Mr. Ciulini (Exhibit 14). However, the above condition does not include within the strategy reference to some of the goals which are stated in condition 17. CAN's proposals would provide concrete direction as to some components of the strategy. These valuable suggestions, although not included in condition 18, should be considered, in our view, in the development of the strategy:

- (1) That immediately all recyclable materials which are currently part of the Blue Box program be banned from the site for disposal.
- (2) That materials identified as reusable, recyclable or compostable shall be banned from the site for disposal.
- (3) That as alternatives become available for diverting different materials i.e. plastics, corrugated cardboard, fine paper, boxboard, etc., ... they also be banned from the site for disposal.
- (4) That a process for city-wide composting, including the Townships ... be investigated, which would include ICI facilities, as well as households.
- (5) Resources be sorted at the source (by the waste generator) to ensure that no toxic or hazardous materials will be dumped, and that no reusable recyclable, and no compostable material will be dumped at the site.
- (6) A vigorous waste reduction program be implemented including effective, on-going education, as well as promoting necessary changes in legislation.
- (7) All revenues from the management of the resources/waste be used only for the purpose of resource/waste initiatives or programs, until such time as it is clearly evident that funds deemed to be surplus are not required for resource management and landfill operations.
- (8) A Community Resource Centre be established, within four months, which will serve as
 - (a) an educational centre,
 - (b) a reuse centre, including residential/industrial waste exchange activities, and
 - (c) a drop-off centre for all reusable and recyclable materials.
- (9) A facility to handle all dry recyclables be established.
- (10) A facility to handle all construction/demolition waste be established.

Condition 19:

On or before September 30, 1992, the City, in conjunction with Orillia and Rama, and with the assistance of the waste advisory committee, shall develop and implement a comprehensive plan for the receipt of contaminated material which has been directed to the landfill by order of the Minister of the Environment. In developing the plan, the proposals of Citizens Acting Now should be considered. The plan shall be subject to the approval of the District Officer.

The Board heard evidence about the practice of the MOE to direct, from time to time, that soil contaminated by gasoline and diesel oil, usually associated with underground storage tanks, be taken to the landfill. The authority for this practice is found in s. 85 of the EPA:

- (1) Where a pollutant is spilled and the Minister is of the opinion that there is or is likely to be an adverse effect and that it is in the best interest of the public to make an order under this section, the Minister may make an order directed to one or more of the following:
 1. The owner of the pollutant. ...
 4. The municipality or regional municipality, or both of them, within whose boundaries the spill occurred. ...
 7. Any public authority.
 8. Any person ... whose assistance is necessary, in the opinion of the Minister, to prevent, eliminate or ameliorate the adverse effects or to restore the natural environment.
- (2) In an order under this section, the Minister may require the doing of everything practicable or the taking of such action as may be specified in the order in respect of the prevention, elimination and amelioration of the adverse effects and the restoration of the natural environment within such period or periods of time as may be specified in the order.

The contaminated soil is aerated at the landfill, as described in section 18 of these reasons, to allow the oils and gases to vaporize. CAN was opposed to such soil being brought to the landfill. Instead, it put forward that the soil should be treated at the location where the contamination occurred. CAN proposed (par. 9) that the following be included as a condition:

[MOE] approved contaminated waste (including contaminated soil) shall not be accepted at this Site until it has been properly treated to render it safe for disposal. The costs of properly treating such waste should be assumed by the waste generator.

If the (MOE) has the authority to order that this waste be accepted at this Site then the current fee shall, at a minimum, be doubled to cover the increased costs associated in dealing with this waste. A comprehensive record of all MOE-approved contaminated wastes (including contaminated soil) shall be established and maintained by the landfill operator. The record shall be available for review by the public at the landfill office at any time during operating hours.

The record of contaminated wastes shall include the following types of information:

- the type of contaminated waste accepted;
- the quantity of contaminated waste accepted;
- the chemicals in the waste which are most likely to cause health or safety problems during their handling at the landfill, and the concentration of these chemicals in the waste (if known);
- the chemicals in waste which are most likely to cause water contamination problems if they escape from the landfill, and the concentration of these chemicals in the waste (if known);
- details outlining how the waste was handled once it was accepted at the landfill.

The record of contaminated wastes shall be included in an appendix of the landfill's annual report.

The government parties were opposed to this provision. They indicated that the soils are not used at the landfill for final cover until they have been well aerated and are safe. Records are kept about the delivery of such materials, but much of the information referred to above may not now be available to the City. The Board was told by counsel that it could not prohibit the delivery of these materials to the landfill, or require pre-treatment before delivery, as the Minister has the authority under the EPA to order otherwise. There is a jurisdictional obstacle to CAN's proposal.

Mr. Glass did not oppose the requirement for record-keeping, as "it would not significantly change the practice as it now exists" (transcript vol. 14, p. 36). However, he suggested that the Board make a recommendation rather than impose a condition.

In our view, the type of information suggested, and public access to that information, is very desirable. However, to implement these suggestions, arrangements would have to be made to have the testing undertaken, and record systems would have to be created. The Board received no information as to the estimated annual cost of the additional testing required by the City (if any) and record systems. For that reason, we are reluctant to include in condition 19 the type of detail proposed by CAN. We recommend to the City that it take steps at the earliest opportunity to review CAN's proposals on this subject, with a view to implementing them. We agree, as did all of the parties, with the principal behind the proposal, namely that the cost of treating such wastes should be borne by the generator through a larger tipping fee.

Condition 20:

Surplus revenue generated by the operation of the landfill and waste reduction and diversion activities undertaken by the City and the Townships shall generally be applied only to present or future waste management operations (including but not limited to landfilling, reduction and diversion), and not used for other unrelated municipal budgetary requirements.

Waste Not suggested (Exhibit 99, par. 19) that revenue received from waste/resource management activities be dedicated to this area and not used by the City for other budgetary purposes. CAN made a similar proposal in par. 19(7) of its proposal. Several of the concerned citizens, who gave evidence at the special evening session, agreed with this view. In our view, this principle is quite important. Although we are reluctant to remove from the City the flexibility of using its revenue as it sees fit, reduction and diversion activities may be restricted if tipping fee surpluses are diverted elsewhere.

The evidence establishes that some of the revenue surpluses have been diverted each year to other areas. Mr. Russell stated in final argument that some money was removed from the fund "because the City also has responsibility for sewage treatment plants and items such as that" (transcript vol. 13 p. 199). This may be an example of the inappropriate use of surplus revenues. The provision of sewage services is generally a municipal utility for which residents are billed separately. Funds needed for sewage plants should come from the budget for sewage plants. If there was a shortfall in that budget because of unexpected expenses, borrowing from another budget should be temporary only.

More could have been done in the area of waste reduction and diversion had those funds been dedicated exclusively to waste programs. Condition 20 is intended to provide a limited amount of flexibility to the City, by establishing a general rule rather than an absolute prohibition.

Condition 21:

The City shall continue to evaluate alternative approaches to solid waste management.

In his final submissions in the 1986 hearing, Mr. Russell suggested that one of the conditions of approval ("conditions") should require the City to continue to evaluate alternative approaches to solid waste management. The certificate issued subsequent to the Board's report included this provision as condition 4. It was repeated in the 1988 emergency certificate. The inclusion of this provision was prompted by the City's proposed list of conditions (Exhibit 96).

Condition 22:

- (1) On or before May 31, 1992, the City, in consultation with Orillia and Rama, shall prepare a plan to study the potential for surface water flow from the landfill into the surrounding surface waters, particularly during storm events and spring run-off.
- (2) The plan shall be submitted for approval to the District Officer.
- (3) In preparing the plan, the City shall consider the recommendations of the committee, the County and community members from the City and the Townships.
- (4) The plan of study shall be completed on or before June 30, 1993.
- (5) The results of the study shall be appended to the landfill's annual report.

This condition is based upon CAN's proposal (par. 14) and arises out of evidence concerning the potential for surface water to flow directly from the landfill into Mill Creek, Ben's Ditch and Lake Simcoe. Dr. Zaltsberg indicated that an examination "could be done quite easily manually" (transcript vol. 8, p. 17) although he did not recommend this be made a condition. He indicated that in the marshy areas, there is a "close relationship" (p. 39) between the quality of surface water and ground water (as measured by the monitors about 18 inches below the surface).

The government parties were opposed. Mr. Russell stated that storm waters would help to dilute the leachate, so that any flow into surrounding surface waters would not therefore be a problem. This of course suggests that dilution is an effective solution to pollution, a concept which we cannot accept.

Mr. Glass submitted that there was no scientific evidence that would support the need for this investigation. He stated that Mr. Usher said he would expect run-off to occur during floods, heavy rains and storms, but without adverse effect.

We are concerned about the level of leachate contamination that might be found in escaping surface waters. It does no good to have a peat buffer zone, with ground water close to or at the surface in many places (Mr. Usher said that leachate "puddle-jumps" through the peat in the wetland), if the opportunity for attenuation is cut short or eliminated by surface spill-over into bordering water bodies. Mr. Usher testified that the longer the residence time for leachate, the better the attenuation. His conclusion that spill-over will have no adverse effect does not appear consistent with the importance of residence time. It may be that he, too, is relying on the dilution-power of Lake Simcoe as a panacea. In our view, dilution is more akin to a placebo.

We are mindful of the evidence of small berms along the edge of Mill Creek, Ben's Ditch and the shore of Lake Simcoe. This is illustrated in figure 6A of Exhibit 54, the hydrogeology report. The report describes this protection as follows:

[I]t is apparent that a minimum of approximately 86% of the theoretical leachate production will leave the waste through surface seepages and overland flow. There are no significant areas of direct discharge of overland flow into the adjacent surface waters. This is due to the slightly elevated banks of the surface water bodies created by dredged fill material along the stream banks, and by natural sand bars at the shore of Lake Simcoe. These slight highs prevent water from discharging directly to the surface water bodies and instead result in the waters infiltrating and migrating through these highs ... As a result, a significant portion of the leachate that enters the marshy area via surface seepages joins the standing water in the swamp behind the creek banks. Considerable evaporation occurs from this standing water and, therefore, the actual volume discharging to the surface water bodies from leachate seepages is expected to be significantly less than the 86% value cited above.
(p. 22)

We are satisfied that the proposed study, which we understand has not been performed at the site before, will provide useful information in understanding more about this landfill and its impacts.

(b) Proposed Conditions - Not Approved

(i) Master Plan

During argument, it was proposed on behalf of the government parties, that there be a condition requiring that the "City and County shall continue to co-operate in waste management master planning for their combined political jurisdictions" (transcript vol. 14, p. 43). CAN proposed a condition (par. 21) that directed that the City "shall not participate financially in the County" master plan. Waste Not proposed a condition (par. 20) that would require the City to withdraw from the County master plan.

As was indicated earlier, the Board has not had referred to it a review of the master plan process. Without a thorough examination of that process, the Board is not prepared to recommend or formulate conditions about participation in that process.

(ii) Wetlands Testing Program

CAN proposed (par. 13) that testing be undertaken with respect to impacts on flora and fauna:

A testing program shall be established immediately to determine whether potentially hazardous contaminants in the leachate (such as heavy metals or organic chemicals) are having harmful effects on the plant and animal life within the wetlands and on the landfill property.

Within three (3) years of the date of issuance of the Certificate of Approval, a report shall be prepared outlining the results of the testing program.

Mr. Watt maintained that although no evidence was called by him to support this proposal, a study of this sort has not been undertaken. A report was prepared in 1985 which Mr. Usher

reviewed before or during the hearing. Mr. Usher did not perceive that there was any indication of problems. Evidence was given at the 1986 Board hearing by Mr. Osmond, senior biologist with Gartner Lee. A two-volume report was prepared by Gartner Lee and filed at that hearing. Mr. Russell retrieved the report for the Board to examine. At pp. 66-8, the report discusses an aquatic bottom fauna survey which was conducted at the site in November 1983. The following observations are excerpted from the report:

All benthic sampling locations in the stream appeared to be affected by impaired water quality or unstable physical conditions. However, it is not possible to determine (except possibly at S3) whether this impact is due to the landfill or high organic loadings from background. ...

No bottom fauna organisms were found at Station S3 ... Leachate-like staining of stream substrates has also been observed near S3. A combination of harsh environmental conditions and possible fouling of bottom sediments from the landfill could result in the absence of bottom fauna organisms at this location. ...

At the four near-shore lake stations, there was no indication that landfill leachate was adversely affecting bottom fauna populations. ... [A] slightly enriched but well oxygenated lake environment ... could be due to loadings carried by discharge from Ben's Ditch.

Dr. Zaltsberg, while indicating that this issue was beyond his expertise as he is not a professional biologist, made the following comment during his testimony:

Apparently, there are some negative effects of this site to the marsh area which surrounds the site. There is no landfill site without any negative effects, and some negative effects would be expected here, as well, but I cannot answer you [as to] what is the magnitude of this effect

(transcript vol. 8, p. 16)

The government parties were opposed to this proposed condition. Mr. Russell stated that monitoring of water would provide a better indication of the potential impacts on animals. He maintained that the existence of "many plants and many animals, whose hooves I believe we saw the other day" during the site visit, establish that there are no difficulties on this subject. Mr. Glass submitted that there was no scientific evidence which would indicate the need for such testing. In the event that monitoring reveals some hazard in the future, steps would be taken then.

The Board was informed by Mr. Watt that no such study has been conducted before at the site. It may prove to be of value, in our view, for that reason. At the same time, we find it difficult to respond to this request when there is so little detail available as to the nature of the study, and the anticipated cost. Given the three year period (from the commencement of the study until the preparation of the report) provided in the proposal, it would appear that the cost will be quite substantial. We would encourage CAN to provide the City and the waste advisory committee with a detailed proposal for the testing program that is sought. The committee can then investigate the merits of the proposal and make its recommendation to the City.

(iii) Additional Surface Water Monitors

CAN proposed (par. 11) additional surface water monitoring stations:

Four (4) surface water quality monitoring stations shall be established in the wetlands on the landfill property to the north, east, west and south of the waste area within six (6) months of the date of issuance of the Certificate of Approval.

The stations shall be established in areas of the wetlands which are most likely to be impacted by leachate from the landfill. The stations shall be included in the regular surface water monitoring program.

The government parties were opposed to this. Mr. Russell stated that additional stations were unnecessary and would not provide new information. Mr. Glass agreed. Mr. Watt submitted that Dr. Zaltsberg, in cross-examination, agreed that two more monitoring stations would provide some additional information. The evidence of Dr. Zaltsberg on this point is as follows:

[W]e had quite extensive observation networks of ground water monitors and surface water monitors, but in order to shield ... some gap, if you want, it is possible to install two additional surface water monitoring stations.

One would be installed in the southeastern corner of the site where there is not any observations right now, and another would be installed maybe in the northwest corner of the site. It could be discussed. There is no need for four additional installations, in my opinion, but maybe two installations would be enough in order to cover the full marsh area around the site. (transcript vol. 8, p. 14)

The cost, per station, according to Mr. Usher, would be \$5,000. He maintained that nothing would be gained from a monitor in the southwest corner, as it is high ground which could not possibly receive run-off from the landfill area:

[T]he ground water flow is easterly towards the site, and therefore, no contaminants could pass in the other direction. ... It would be reading background water quality conditions. (transcript vol. 13, p. 148)

The proposed location for the monitor in the northwest corner would be east of station S7. Mr. Usher felt that if this monitor was close to the landfill area, it would indicate contamination because the peat buffer would not yet have had an opportunity to attenuate the leachate. On the other hand, if the monitor was located closer to the bank of Mill Creek, Mr. Usher felt that you would obtain no better information than was already available from stations 10, 11 and 14.

There was some confusion as to the amount of leachate which enters the area referred to as the "northwest ditch". The hydrogeology report (Exhibit 54) indicated at p. E5 that this area was receiving 7.26% of total leachate production, or 53% of the leachate which was migrating through the peat to the surface water courses. During cross-examination by Mrs. Cooney, Mr. Usher indicated that this figure seemed too high to be accurate:

Without having looked at that calculation in detail, I would suggest that the amount is likely the same as anywhere else moving sideways given the same amount of driving force. And also, the nature of the waste is such that the leachate would be the same.

... I would not have a concern over the quality of that because of the very long travel distance up to Mill Creek and the peat in that area. (transcript vol. 6, pp. 72-3)

We perceived Dr. Zaltsberg's endorsement of these two additional locations to be rather unenthusiastic. As Mr. Russell pointed out, experts can always use more data and information.

The question to be decided here is whether the additional information from these two locations would make a significant contribution. If the evidence were to establish that the northwest ditch receives half of the leachate which migrates into the water courses around the site (including Lake Simcoe), we would be inclined to require an additional monitoring station in the northwest corner of the site, close to the south bank of Mill Creek. However, the confusion as to the correct figures for leachate migration into the northwest ditch was not resolved. We would urge the parties to scrutinize the accuracy of the calculations in the hydrogeology report.

(iv) Mass Loading Report

Mr. Watt proposed (Exhibit 97, par. 12) that an additional report be prepared within one year of the Board's decision, estimating "the mass loading of various chemicals into the wetlands on the landfill property". The report should include, but not be restricted to, the following:

- lead, mercury, cadmium, arsenic, nickel, copper, iron, zinc;
- cyanide, ammonia, phosphorus, phenols;
- hexachlorobenzene, mirex, dieldrin, DDT, PCB's, benzo-a-pyrene, toxaphene.

Mr. Usher testified that no analysis had been carried out recently on the plants in the buffer zone. However, this area is lush and green, and appeared to him to be functioning well. Although mass loading calculations were prepared for the two water courses and Lake Simcoe, no such calculation was undertaken with respect to the peat zone. Mr. Usher indicated that "there is no way of sticking a flow metre into the peat and measuring the flow" (transcript vol. 6, p. 30). He admitted that there are trees dying in some of the areas of the buffer zone where water ponding has occurred. However, the loss of trees is not due to the quality of the water.

The government parties were opposed to CAN's proposal. Mr. Russell indicated that mass loading in the wetlands is not a regulated matter, and hence this proposal is unacceptable to his client. Mr. Glass submitted that since there is no regulation dealing with mass loading, the Board would not have jurisdiction to deal with it. In any event, he put forward that this proposal would not be necessary unless there is an indication of a problem. Mr. Watt referred to Dr. Zaltsberg's evidence that a study of mass loading, if conducted, should be done no more than once every three years. He did not provide any enthusiasm or support for the proposal. In his testimony Dr. Zaltsberg made the following observations:

[S]everal previous reports contain numerous chemical loading calculations which provide [a] very comprehensive picture of what is going on in the site, and there is no need for any additional mass loading calculations as a monitor, at least.

... [H]eavy metals concentrations could not be any concern regarding this site because they are not very mobile and I don't expect that they move at any significant distance off the site. And there is not any indication of elevated heavy metal concentrations in the surface water samples. And there is no direct indication of elevated concentrations of heavy metals in the leachate. So, I don't see any reason for any additional mass loading calculations for heavy metals.

With regards to other parameters which are mentioned here, again, if we agree to sample ... once in four or five years, maybe there is some reason to provide some loading calculations for these

parameters once in awhile. But frankly speaking, I don't see any necessity for such calculations. (transcript vol. 8, pp. 14-5)

Mr. Gray was equally skeptical about this proposal:

I don't think it is a practical request. One very significant factor would be the heavy metals with their airborne matter, which is probably one of the largest causes of mercury contamination in trees and lakes today. (transcript vol. 9, p. 93)

The airborne matter to which he referred is caused by the incineration of various materials around the world, and arrives along with acid precipitation.

In our view, there is no basis for Mr. Glass' jurisdictional argument, and we reject it. However, without more evidence, we would be reluctant to order the production of this additional report. CAN has not established to our satisfaction that this report would provide significant assistance.

(v) Designation of Consultants

Waste Not sought a condition requiring that Proctor & Redfern's services on behalf of the City be terminated (Exhibit 99, par. 21). There was no relevant evidence to support this unusual request. The Board refused to allow Mrs. Cooney to file documentary hearsay evidence about some other project or facility on this subject. In addition, par. 22 proposed a condition directing the resource management team to retain certain consultants to evaluate the reports of Gartner Lee. We rejected this suggestion for the same reason. Par. 23 proposes a condition requiring the team to retain consultants to "evaluate the effects of the [landfill] on the whole ecosystem". In our view, this might be suitable as a suggestion for the appropriate committee, but not as a condition.

(vi) Waste Management Contracts

CAN proposed a condition (Exhibit 97, par. 20) that no new waste management contracts be concluded until such time as the plan has been approved. Waste Not did likewise (Exhibit 99, par. 17). As the quantity of blue box materials increases, the amount of waste remaining for disposal decreases. During final argument Mr. Russell pointed out that Mr. Peel had requested that when these contracts came up for renewal, he wanted to review them to ensure there was adequate flexibility (transcript vol. 13, p. 208). Although the proposed condition contains useful advice, we did not think it prudent to include this as a condition.

26. Pre-Hearing Consultation

There were serious problems with public consultation leading up to the hearing. It was evident to the Board at the preliminary hearing on March 20, 1991, that meaningful negotiations between the government parties and the citizens' groups were not occurring. Mr. Green, on behalf of the County, stated during final argument:

I think it would be an incredible understatement to say that there has been a failure of public process in this application to date ... maybe I should say up to the end of August. ... But I say the public process to this point has been a failure (transcript vol. 13, p. 233)

Mr. Watt agreed with this position. The same observation is found in the intervenor funding decision (July 25, 1991) by a different panel of the Board:

The intervenor [CAN] was not invited to fully participate in the decision-making process and it appears that it may have been ignored by the authorities. It is important that the Group continue to be involved in the decision-making process with regard to the application. (p. 3)

It was not until the hearing was under way that some progress was made by the parties in resolving or narrowing their differences. Had this occurred earlier in time, as it should have, there would likely have resulted a shorter, more focused and less costly hearing. At the preliminary hearing the Board requested the parties to consult with each other in order to resolve or narrow the issues in dispute. Ms. Clune of CAN made a request that the councils of the City and the Townships meet with some concerned citizens and discuss the issues in order "to speed this whole process up a bit" (transcript p. 95). In order to avoid the great expense to the taxpayers that would result from a long hearing, she encouraged the others present to meet early, "work out our ideas and present our suggestions" (p. 115), and reach a consensus.

In its procedural directions dated April 4, 1991, the Board directed the parties to have their experts meet in early August to determine which issues could be resolved. The parties were directed thereafter to "make their best efforts to reach consensus upon all facts, issues and expert opinions which do not require adjudication" and to file a "written statement of agreed and unresolved facts, issues and expert opinions" no less than 15 days prior to the commencement of the hearing. No such statement was filed before the hearing resumed.

Nor did a working meeting between the councils and the citizens' groups occur. A settlement meeting between the parties took place only a week before the hearing resumed in September, with little success. During the course of the hearing, ten separate drafts of proposed conditions were filed by the parties - three by the proponent, three by the Director, two by CAN and another two by Waste Not. In fact, two of these drafts were filed on the last day of the hearing. Unfortunately, it appears to the Board that serious consultations between the parties did not begin until after the hearing resumed.

If any lesson is apparent from this experience, it is that draft conditions must be prepared and circulated by a proponent well in advance of the hearing of evidence. Negotiations amongst the parties must occur prior to the hearing in order to determine whether agreement can be reached *at that stage* about any or all of the conditions. In the event that some consensus is reached, the evidence led at the hearing can then be abridged with the result that hearing time and expense are thereby saved.

A more satisfactory process occurred in the *Kenora* landfill expansion hearing (EP-90-02), where the parties' negotiations commenced well in advance of the hearing. As a result, the hearing

of evidence and argument lasted only three days. In its November 1991 reasons, the Board made the following observation:

The Board recognizes that the hearing would have lasted far longer than three days had it not been for the considerable effort made and success achieved by the parties in their attempt to narrow the issues and resolve areas of dispute. The Board was pleased to learn that Kenora had voluntarily agreed to advance funding ... prior to the preliminary hearing and funding hearing in order to speed up the process and permit these parties to retain consultants. The parties and their counsel are to be commended for their co-operation in making the environmental review process more efficient.
(p. 6)

27. Conclusion

The clash between the municipalities, the County and the MOE Director on the one side, and CAN and Waste Not on the other, both prior to and during the hearing, appears to have resulted from lack of trust, opposing views on the decision-making process, a struggle for power and disagreement over the need for reform and the pace of progress.

It is evident that the degree of conflict between the two sides both before and during the hearing has taken its toll on the parties. Mrs. Cooney commented upon this in her closing remarks, and made a plea for more co-operation in the future:

I would hope that a process could be developed which would resolve conflicts, not widen gaps between city politicians and citizens. I would hope a process could be developed which would facilitate communication; a process which would help to solve problems; a process which would generate co-operative efforts to work for the betterment of this planet and to move forward. (transcript vol. 14, p. 91)

Yet considerable progress in the area of waste diversion has been made to date, in spite of those conflicts or perhaps, in part, as a result of them. Much more progress is, of course, still possible.

It appears to us that the energy and determination of reform-minded members of the community, such as the representatives of CAN and Waste Not, and the dedication and enthusiasm of the landfill staff, explain much of the achievement made to date. With more support from the rest of the community, and the allocation of greater resources by municipal, County and provincial levels of government, this community could quickly become a leader in waste reduction and diversion.

DECISION

1. The application by the Corporation of the City of Orillia for approval of an expansion of the geographical service area of the Kitchener Street Landfill, to include domestic, commercial and solid, non-hazardous industrial waste from the Township of Orillia and the Township of Rama, is hereby granted for a period concluding February 28, 1997, subject to the conditions set out in the Conditions of Approval, attached hereto as Schedule A.
2. The Board will hear from the parties on the issue of costs, if requested, at a date, time and place to be scheduled by the Board Secretary.

DATED at TORONTO this 24TH day of FEBRUARY, 1992

"Len Gertler"

Len Gertler, Chair

"Alan D. Levy"

Alan D. Levy, Member

Conditions of Approval

- 1 No waste shall be received at the City of Orillia ("City") Kitchener Street Landfill site ("the landfill") from the Township of Orillia ("Orillia") or the Township of Rama ("Rama"), under the authority of an Emergency Certificate of Approval, A250601, dated June 14, 1988 (or any successor certificate), wherein the service area of the landfill has been expanded to include Orillia and Rama, after the decision of the Environmental Assessment Board has been released.
- 2 No waste shall be received at the landfill except in accordance with the terms of the Board's decision, the conditions of the Provisional Certificate of Approval, A250601, dated December 19, 1986 ("the Certificate"), and these Conditions of Approval ("Conditions").
- 3 After the decision of the Board has been released, the landfill may receive waste from the City in accordance with its terms and these Conditions until such time as the landfill has reached its final contours in accordance with the Certificate.
- 4 After the decision of the Board has been released, the landfill may receive waste from Orillia and Rama in accordance with its terms and these Conditions until the earlier of February 28, 1997, or such time as the landfill has reached its final contours in accordance with the Certificate.
- 5 The City shall prepare and submit to the District Officer of the Central Region of the Ministry of the Environment ("MOE"), within 60 days after the release of the Board's decision, a consolidated Operations and Development Plan ("the Operations Plan") based upon the report by Proctor & Redfern Limited entitled *Supporting Documentation to an Application for a Certificate of Approval for a Waste Disposal Site (Landfill)* dated September 1985, and the report by Proctor & Redfern Limited entitled *Supporting Documentation to an Application for a Certificate of Approval Kitchen Street Landfill Service Area Interim Expansion* dated September 1990, revised November 1990.
- 6 Except as otherwise provided by these Conditions, the landfill shall be operated in accordance with the Operations Plan.
- 7 No liquid industrial wastes or hazardous wastes shall be disposed of at the landfill.
- 8 No waste shall be burned at the landfill.

- 9 (a) The City shall continue the ground water monitoring program described in the report by Gartner Lee Limited entitled *Hydrogeological Site Assessment and 1989 Monitoring Report*, dated June 1990 and revised November 1990 ("the hydrogeology report"). The ground water monitoring frequency shall be that set out in the report by Gartner Lee entitled *1990 Monitoring Final Report* dated July 1991 ("the Monitoring Report"), subject to any changes directed or approved by the District Officer after the release of the decision.
- (b) Ground water samples shall be analyzed for, but not limited to, the following parameters: Ph, electrical conductivity, hardness, alkalinity, chloride, sulphate, phosphorus, phosphates, phenol, ammonia, nitrate, nitrite, TKN, iron, COD, DOC, DIC and such other parameters directed or approved by the District Officer from time to time. Water level elevation shall be measured in all monitoring wells during each sampling round. The District Officer shall approve any changes to the ground water monitoring program after the release of the Board's decision.
- (c) Ground water samples from those monitors located in the buffer zone surrounding the fill area shall be analyzed throughout the 1992 testing program for mercury, in order to ensure that there are no exceedences of the Canadian Water Quality Guidelines or the Provincial Water Quality Objectives at the landfill property boundary.
- 10 The City shall continue the surface water monitoring program described in the hydrogeology report. The frequency of surface water monitoring shall be that set out in the Monitoring Report (i.e. 3 times/year concurrent with the ground water monitoring program) subject to any changes directed or approved by the District Officer after the release of the Board's decision.
- In addition to the parameters indicated in the hydrogeology report, surface water samples shall be analyzed for, but not limited to, BOD and such other parameters directed or approved by the District Officer from time to time. The water temperature and the dissolved oxygen content of surface water samples shall be measured in the field. During each sampling round: (a) water level elevation shall be measured at Stations S1, S2, S7 and S8, and (b) flow measurement shall be conducted at Station S7. The District Officer shall approve any changes to the surface water monitoring program after the release of the Board's decision.
- 11 In addition to the above monitoring programs, the City shall obtain ground water samples from locations 11-I, 3-II, 27-II, 21-II, 1-III and 14-III, and surface water samples from locations S3, S7, S8, S10 and S13 during the spring and fall 1992 monitoring programs which shall be analyzed for volatile extractable organics. The District officer may in his discretion from time to time discontinue, modify, extend or renew the volatile extractable organics monitoring program.

- 12 Before disposing of waste in Cell 6, the portion of the sanitary sewage line that connects the existing sanitary sewage line at the Huronia Regional Centre to the Sewage Treatment Plant shall be properly decommissioned and all appropriate measures taken to prevent the egress of leachate either through this sewage line or the backfill material around this sewage line.
- 13 No use shall be made of the peat zone in or around the landfill that might reduce the effective attenuation capability of the peat to handle leachate migration away from the landfill.
- 14 The City shall submit to the District Officer on or before the 30th day of April in each year an annual monitoring report prepared by a qualified hydrogeologist approved by the District Officer. The said report shall contain the ground water and surface water monitoring data collected during the previous calendar year, the hydrogeologist's thorough interpretation of the said data and his or her recommendations regarding any proposed changes in the monitoring programs. The said report shall also identify the status of progress under the Operations Plan and contain descriptions of all deviations from the Operations Plan and their potential environmental impacts.
- 15(1) On or before August 31, 1992, the City, in consultation with Orillia and Rama, shall prepare a plan for the improvement of the water quality in Mill Creek and Ben's Ditch, in order to eliminate the impact caused by the landfill, and submit same to the District Officer for approval.
- (2) In preparing the plan the City shall consider the recommendations of the waste advisory committee, referred to in condition 16, the County and community members from the City and the Townships.
- (3) The plan shall ensure that the water quality between stations S7, S8 and S15 shall be improved to a level which, if the effluent from the sewage treatment plant was subtracted, would be equal to or better than the present water quality in Mill Creek west of station S7 and in Ben's Ditch north of station S8.
- (4) Implementation of the plan shall be completed on or before August 31, 1993.
- 16 The City, in consultation with Orillia and Rama, shall establish, fund and maintain a waste advisory committee ("committee") which will incorporate, as a minimum, the following features:
- (i) The committee's mandate is to advise and assist the three municipalities in
- (a) the preparation and implementation of an Area Waste Minimization Plan,
- (b) improving the operation and management of the landfill,

- (c) reviewing all action plans with respect to waste management which are under consideration by any of the municipalities,
- (d) advising the three municipalities on all issues relating to waste management, and
- (e) such other waste management matters that may from time to time be referred to it by the municipalities.

In the exercise of its mandate the committee shall consult widely with local community and interest groups throughout the area.

- (ii) Membership on the committee will come from local community and interest groups (including a representative from each of Citizens Acting Now and Waste Not, if available), the business sector and municipal government (staff and elected representatives).
 - (iii) The committee's members will be appointed by the City council after each municipal election.
 - (iv) The committee shall be comprised of no less than 8 members at any time.
 - (v) Adequate funding shall be allocated to the committee on a regular, budgetary basis.
- 17(1) On or before May 31, 1992, the City, in consultation with Orillia and Rama, shall prepare a five-year area waste minimization plan ("the plan") and submit it for review by the MOE Waste Reduction Office and approval by the District Officer. The plan will include, as a minimum, the following features:
- (i) A statement of goals, to include that
 - (a) all waste received at the landfill will be sorted;
 - (b) no toxic substances will be landfilled;
 - (c) no reusable, recyclable or compostable materials will be landfilled.
 - (ii) A multi-dimensional, community-wide and sustained public education program which will promote the goals.
 - (iii) A phased plan with specific target objectives including
 - (a) sorting and separating at source;
 - (b) reduction, reuse and recycling;
 - (c) household and municipal composting;
 - (d) a community resource centre, and
 - (e) the strategic use of bans on materials such as cardboard.

- (iv) The requirement for a regular periodic evaluation of all aspects of the plan.
- (2) In preparing the plan the City will consider the recommendations of the committee, the County and community members from the City and the Townships.
- 18(1) The City, in consultation with Orillia and Rama, will prepare a waste minimization strategy ("the strategy") with respect to the plan referred to in par. 17 above. The strategy will include, as a minimum, detail with respect to the following information:
 - (i) all financial, technical and human resources necessary for the implementation of the plan;
 - (ii) the timetable when each component of the plan will become operational;
 - (iii) the amount of solid waste reduction and diversion (re-use, recycle and compost) which is projected for each component of the plan;
 - (iv) details of how the implementation of each component of the plan will be managed;
 - (v) methods and frequency of monitoring the progress of implementation of each component of the plan;
 - (vi) procedures for assessing new or unforeseen opportunities.
- (2) In preparing the strategy, the City will consider the recommendations of the committee, the County and community members from the City and the Townships.
- 19 On or before September 30, 1992, the City, in conjunction with Orillia and Rama, and with the assistance of the waste advisory committee, shall develop and implement a comprehensive plan for the receipt of contaminated material which has been directed to the landfill by order of the Minister of the Environment. In developing the plan, the proposals of Citizens Acting Now should be considered. The plan shall be subject to the approval of the District Officer.
- 20 Surplus revenue generated by the operation of the landfill and waste reduction and diversion activities undertaken by the City and the Townships shall generally be applied only to present or future waste management operations (including but not limited to landfilling, reduction and diversion), and not used for other unrelated municipal budgetary requirements.

- 21 The City shall continue to evaluate alternative approaches to solid waste management.
- 22(1) On or before May 31, 1992, the City, in consultation with Orillia and Rama, shall prepare a plan to study the potential for surface water flow from the landfill into the surrounding surface waters, particularly during storm events and spring run-off.
- (2) The plan shall be submitted for approval to the District Officer.
- (3) In preparing the plan, the City shall consider the recommendations of the committee, the County and community members from the City and the Townships.
- (4) The plan of study shall be completed on or before June 30, 1993.
- (5) The results of the study shall be appended to the landfill's annual report.

Table of Abbreviations

Additional Testing Report	<i>Gartner Lee August 1991 Additional Testing Report</i>
Blue Book	<i>Water Management: Goals, Policies and Implementation Procedures of the Ministry of the Environment (1984)</i>
BOD	biological oxygen demand
CAN	Citizens Acting Now
Certificate	Provisional certificate of approval No. A250601, December 19, 1986
City	Corporation of the City of Orillia
COD	chemical oxygen demand
Committee	Waste advisory committee of City council
Conditions	Conditions of approval
County	County of Simcoe
DDT	dichlorodiphenyltrichloroethane
Director	Director, Approvals Branch, Ministry of the Environment
District Officer	MOE District Officer, County of Simcoe, Central Region
DIC	dissolved inorganic carbon
DOC	dissolved oxygen content
EAA	<i>Environmental Assessment Act</i>
EFW	energy from waste
EPA	<i>Environmental Protection Act</i>
Fe	iron
ha	hectare
Hydrogeology Report	<i>Hydrogeological Site Assessment and 1989 Monitoring Report</i> , by Gartner Lee Limited, June 1990,
ICI	industrial, commercial and institutional
kg	kilograms
l	litre
Landfill	Kitchener Street Landfill in the City of Orillia
m	metre
m ³	cubic metre
mg	milligrams
Minister	Minister of the Environment (Ontario)
MOE	Ministry of the Environment
Monitoring Report	<i>Gartner Lee 1990 Monitoring Final Report</i> , July 1991
N	nitrogen
ODWO	Ontario Drinking Water Objectives
Operations Plan	consolidated operations and development plan
Orillia	Corporation of the Township of Orillia
PCB	polychlorinated biphenyl
pH	scale of measurement of acidity or alkalinity

plan	waste minimization plan
ppb	parts per billion
ppm	parts per million
P&R Report	<i>Supporting Documentation to an Application for a Certificate of Approval</i> , Proctor & Redfern Limited, revised November 1990
PWQO	Provincial Water Quality Objectives, MOE
Rama	Corporation of the Township of Rama
Reg. 309	Regulation 309, RRO 1980 as amended, made under the EPA
s	second
strategy	waste minimization strategy
TKN	total Kjeldahl nitrogen
TOC	total organic carbon
Townships	Townships of Orillia and Rama
ug	milligram
VOC	volatile organic compounds
WMAC	Waste Management Advisory Council
WRO	Waste Reduction Office of MOE

**CITY OF ORILLIA
LANDFILL SITE
EXTENSION OF SERVICE AREA**

Witness List

1. David Schram
2. Keith Marshall
3. Bob Newell
4. Michael McMurter
5. David Wilkins
6. Bill Tinslay
7. Randy Markham
8. Jim Storey
9. Paul Leskew
10. Brian Murrant
11. Donald R. McDonald
12. Bill Bundy
13. Tony Gulman
14. Dr. Judy Caldwell
15. Chris Thomas
16. John Nidderly
17. Ted Duncan
18. Steve Usher
19. Elmore Peel
20. Steen Klint
21. Dr. Ernst Zaltsberg
22. Adam Ciulini
23. Ian Gray
24. Colleen Cooney
25. Diane van de Valk
26. Shaun Vinson
27. Stephen Croswell
28. Lloyd Johnstone
29. Kelly Clune

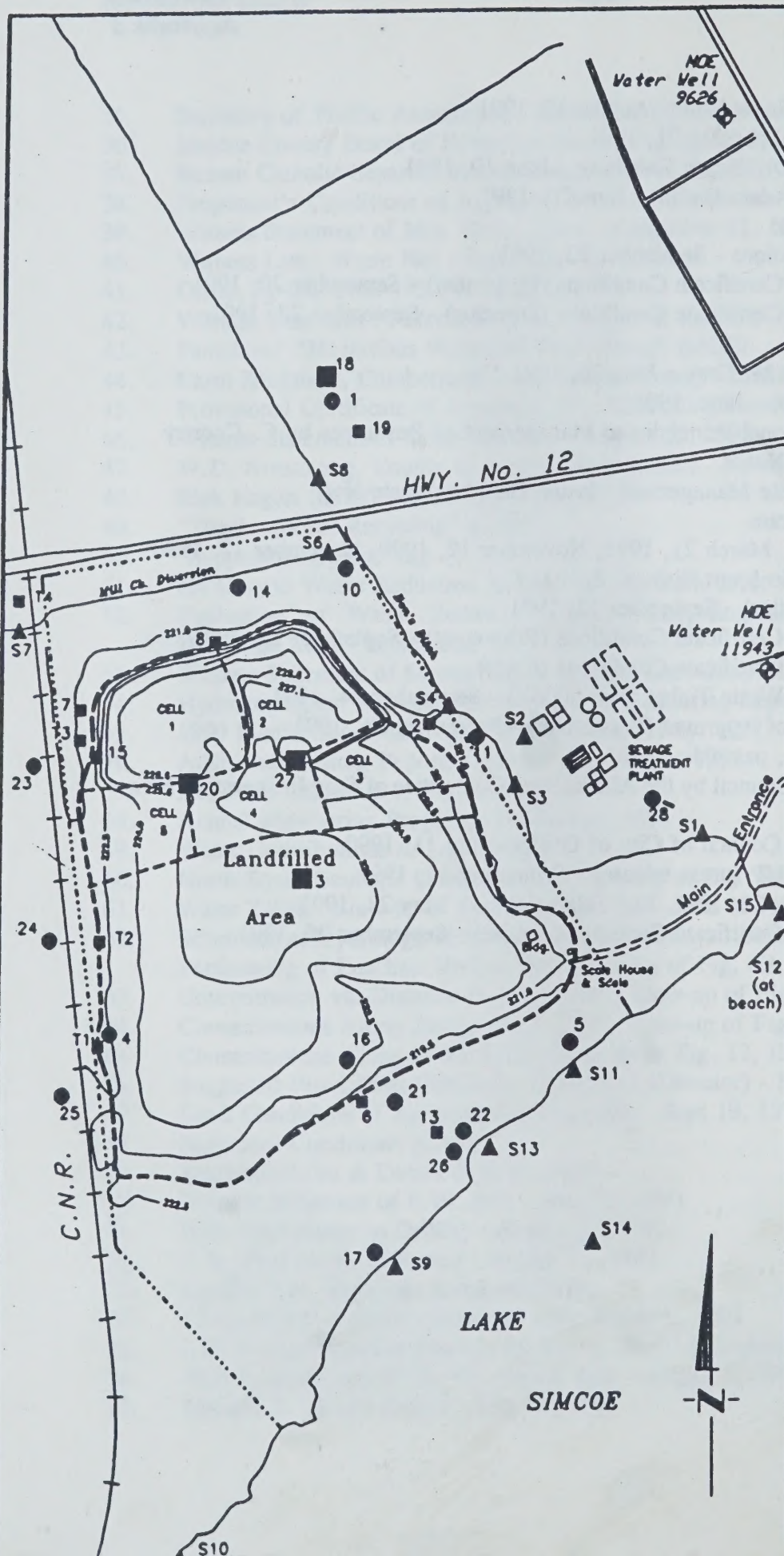
**CITY OF ORILLIA
LANDFILL SITE
EXTENSION OF SERVICE AREA**

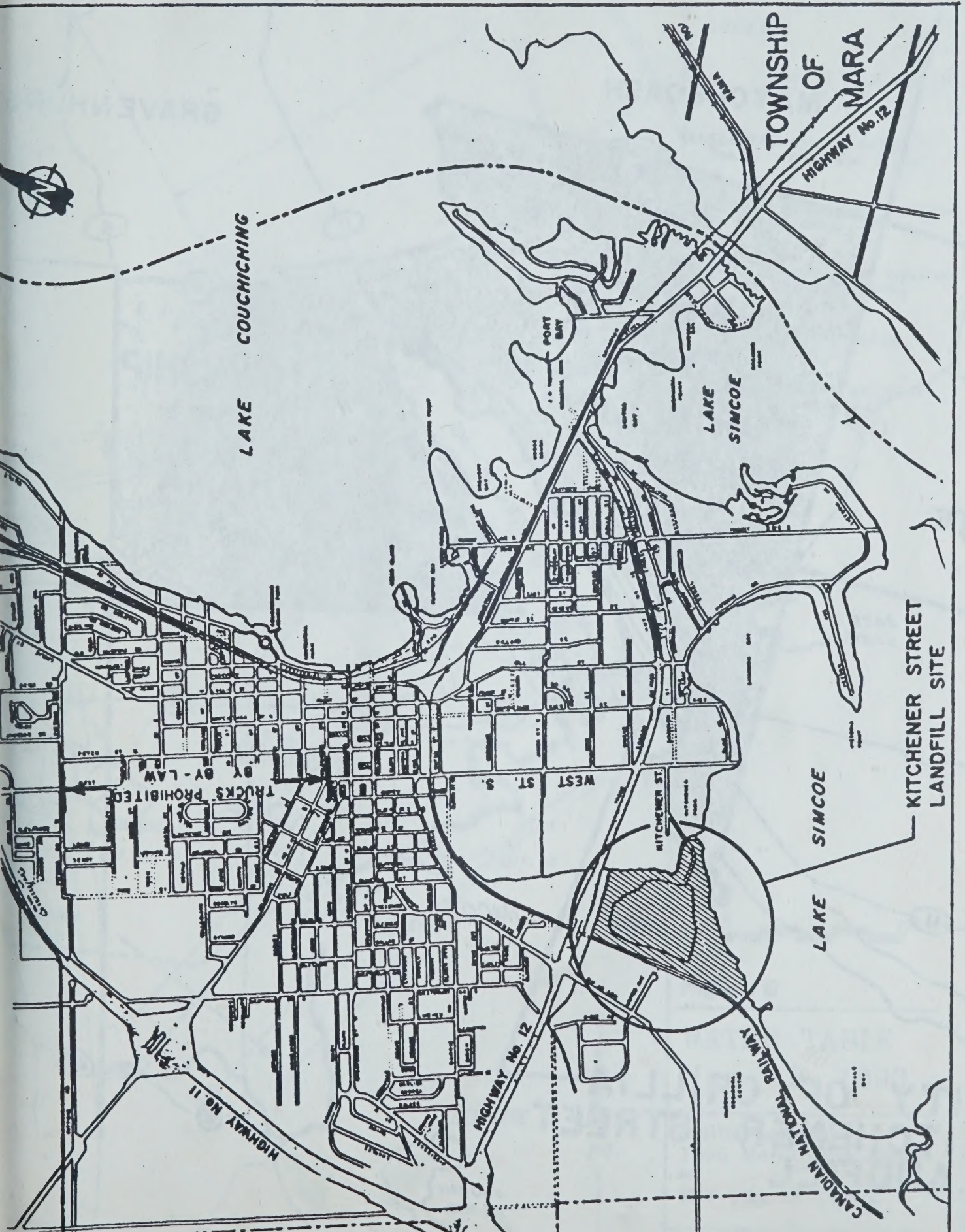
Exhibit List

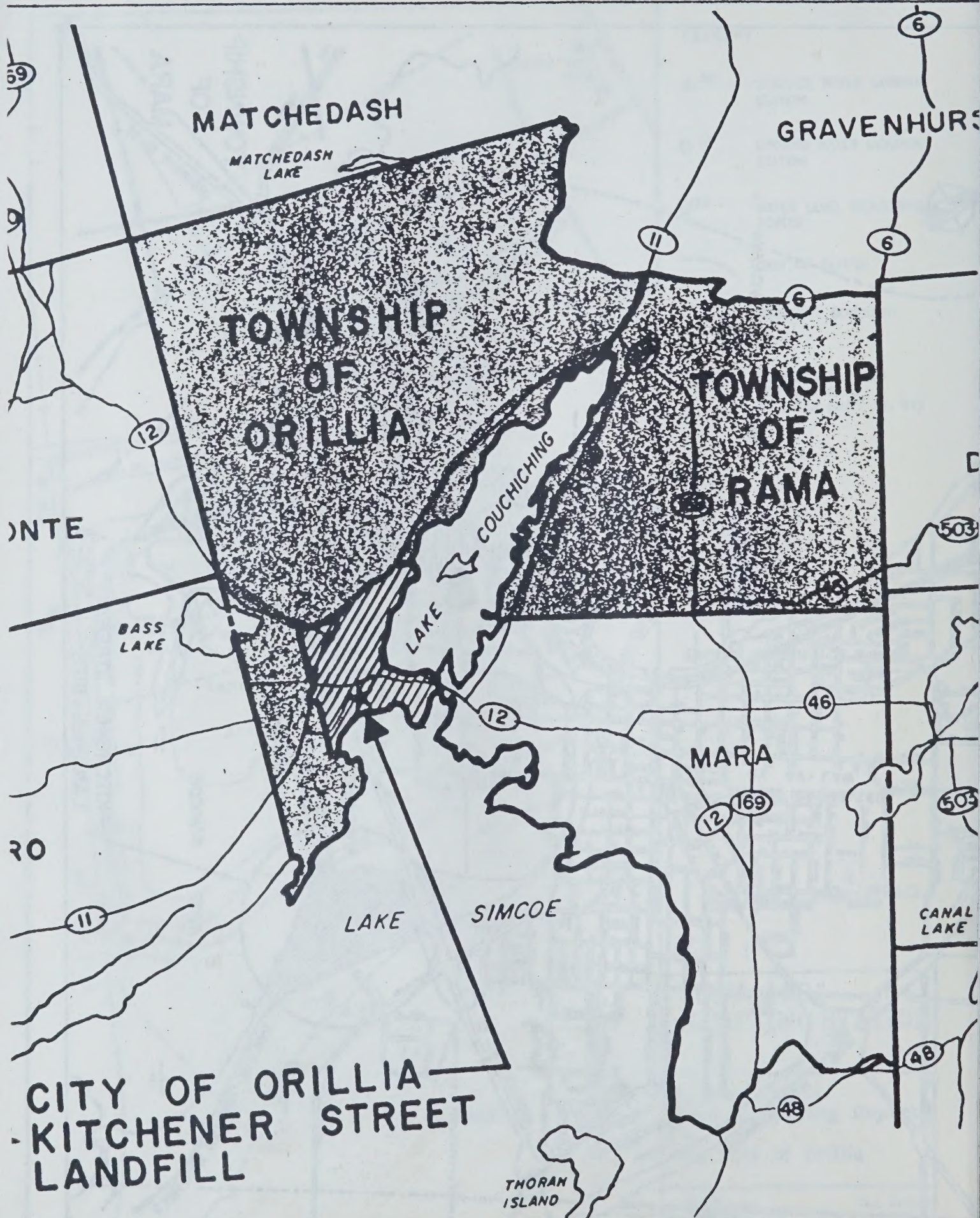
1. Application of City of Orillia for Certificate of Approval - December 4, 1990
2. Order-in-Council Granting Exemption from EAA - May 17, 1990 (O. Reg. 271/90)
3. Notice of Referral from MOE - December 17, 1990
4. Notice of Hearing - February 5, 1991
5. Appointment of Panel - February 19, 1991
6. Affidavit of Service of Wharton D. Russell sworn March 14, 1991
7. Basic Statistical Data - City of Orillia - March 15, 1991
8. Emergency Certificate of Approval - June 14, 1988
9. Statement of Issues (Proponent) - March 20, 1991
10. Landfill Reductions (Table)
11. Affidavit of Service of Notice for Public Evening Session sworn September 10, 1991
12. Glossary of Waste Management Terms (Reg. 309)
13. Applicant's Understanding of Unresolved Issues - September 5, 1991
14. Witness Statement of Adam T. Ciulini, Waste Reduction Office, MOE - September 9, 1991
15. Witness Statement of Colleen Cooney (WASTE NOT) Education Principles
16. Outline of Issues & Proposed Witnesses (CAN)
17. Notice of Motion by Proponent - September 6, 1991
18. Curriculum Vitae - David Schram, Proctor & Redfern
19. Supporting Documentation by Proctor & Redfern revised November 1990
20. Map of Interim Expansion of Service Area: Blow-up of Fig. 1, Exh. 19 - June 1990
21. Map of Landfill showing Haul Routes: Blow-up of Fig. 2, Exh. 19 - August 1989
22. Map of Land Use: Blow-up of Appendix B, Diagram 1, Exh. 19 - August 1989
23. Statistical Data, Update - August, 1991 - September 4, 1991
24. Map of General Site Plan & Approved Final Landform: Blow-up of Fig. 3, of Exh. 19 - August 1989 (Revised August, 1991)
25. Photographs and Chart of Waste Management Activities
26. Assessment Criteria, by David Schram - August 30, 1991
27. Tipping Fees - effective July 1, 1991
28. Standards for Waste Disposal Site, Reg. 309, section 8
29. Outstanding Issues - Traffic & Hydrogeology, from CAN - September 12, 1991
30. Blue Box Programs - August 29, 1991
31. 1990 Performance, Solid Waste Disposal/Diversion - September 9, 1991
32. Diversion Performance & Future Targets
33. Summary of Waste Generated & Management, 1989 - 1990
34. Planning & Approvals Process, 1978 - 1991

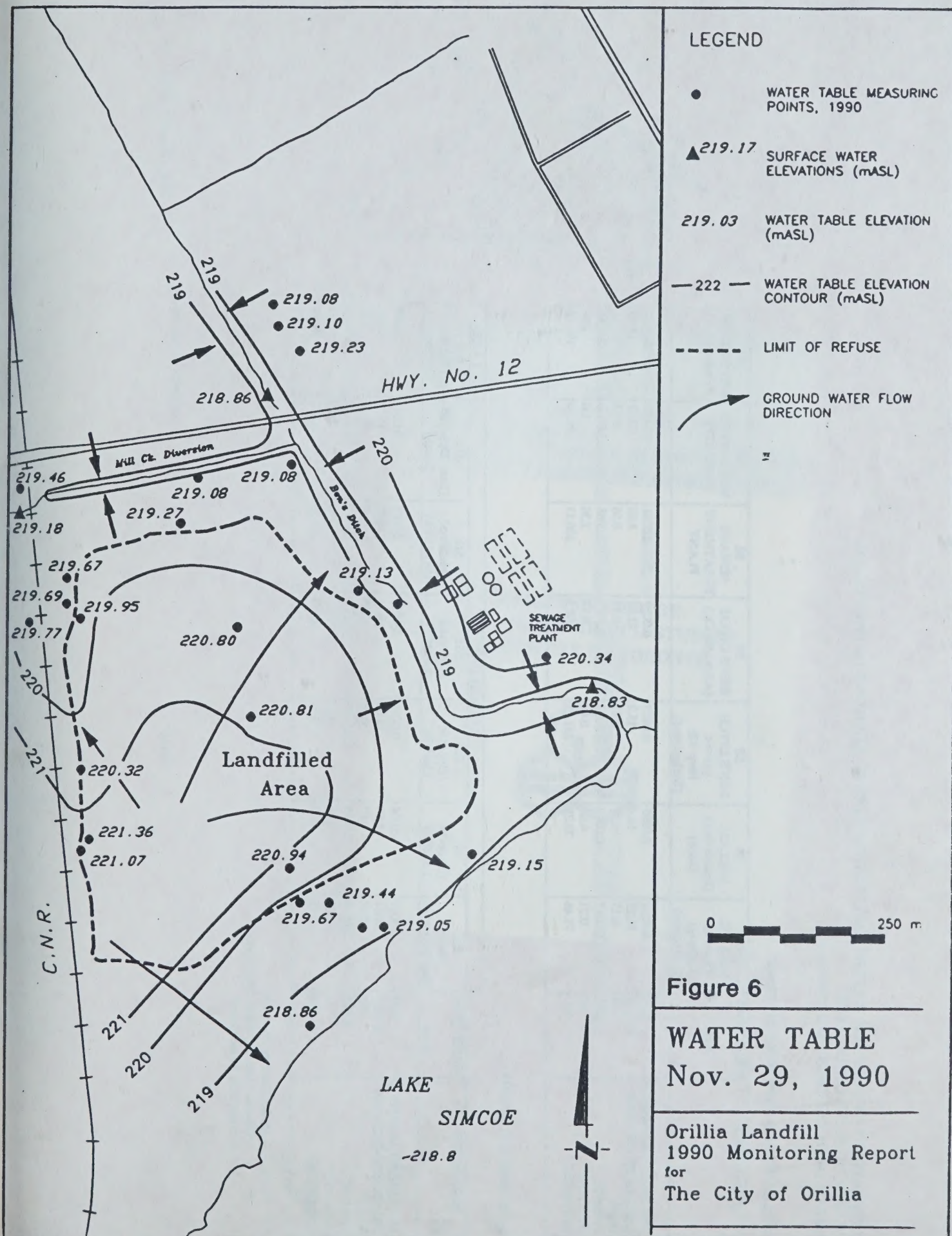
35. Summary of Traffic Assessment - September 12, 1991
36. Simcoe County Board of Education (letter) - October 17, 1990
37. Roman Catholic Separate School Board (letter) - October 17, 1990
38. Proponent's Conditions of Approval, Draft 8 - September 10, 1991
39. Witness Statement of Mrs. Kelly Clune - September 12, 1991
40. Witness List - Waste Not - September 12, 1991
41. Orillia By-law 1990-195 - October 9, 1990
42. Witness Statement of David Schram, Proctor & Redfern - May 28, 1991
43. Pamphlet: "Hazardous Wastes in Your Home" (MOE)
44. Carol Kingshott, Cumberland Beach School (letter) - October 30, 1990
45. Provisional Certificate of Approval, No. A252603 (Transfer Station) - October 5, 1990
46. Witness Statement of Keith Marshall - August 22, 1991
47. W.D. Armstrong, County of Peterborough (letter) - November 22, 1989
48. Rick Hogan (letter) - April 24, 1991
49. "Thank you for Recycling" sticker
50. "Support Recycling" tag
51. An Ontario Waste Reduction Action Plan, by Ruth Grier - February 21, 1991
52. Evaluation of Waste Reduction, Reuse, Recycling and Composting, report by D. van de Valk - September, 1991
53. Witness Statement of Steven Usher, Gartner Lee - May 31, 1991
54. Hydrogeological Site Assessment & 1989 Monitoring Report, Gartner Lee - June 1990
55. 1990 Monitoring Final Report, Gartner Lee - July, 1991
56. Additional Testing Report, Gartner Lee - August 1991
57. Site Plan: Blow-up of Fig. 2, Exh. 54
58. Annual Monitoring Program - September, 1991
59. Water Contributions to Lake Simcoe
60. North-South Geologic Cross Section: Blow-up of Fig. 4A, Exh. 54
61. Water Table: Blow-up of Fig. 5A, Exh. 54 - June 30, 1989
62. Schematic of Hydrologic & Hydrogeologic Pathways: Blow-up of Fig. 6A, Exh. 54; and Partitioning of Leachate Production: Blow-up of Fig. 6B, Exh. 54
63. Concentration vs. Distance from Landfill: Blow-up of Fig. 7, Exh. 54
64. Concentrations Along Surface Flow Path: Blow-up of Fig. 11, Exh. 54
65. Concentrations Along Shore Line: Blow-up of Fig. 12, Exh. 54
66. Suggested Provisional Certificate Conditions (Director) - September 17, 1991
67. Draft Conditions of Approval by Waste Not - Sept 19, 1991
68. Suggested Conditions (CAN)
69. Responsibilities & Duties of E.W. Peel
70. Witness Statement of E.W. Peel - May 31, 1991
71. E.W. Peel (letter to Orillia) - August 15, 1991
72. E.W. Peel (letter to Rama) - August 15, 1991
73. Landfill Site, Revenues & Expenditures
74. Composition of Waste Generated - September 9, 1991
75. 3-R's Implementation Strategy by Mr. E. Peel - September 17, 1991
76. Witness Statement of Ms. D. van de Valk - August 7, 1991
77. Michele P. Gouett (letter) - July 24, 1990

78. Witness Statement of Steen Klint - August 30, 1991
79. Nancy Keefe (letter) - February 21, 1991
80. Witness Statement of Dr. Ernest Zaltsberg - June 19, 1991
81. Witness Statement of Adam Ciulini - June 20, 1991
82. Waste Reduction Office
83. Waste Volume Calculations - September 22, 1991
84. Suggested Provisional Certificate Conditions (Proponent) - September 20, 1991
85. Suggested Provisional Certificate Conditions (Director) - September 23, 1991
86. I.M. Gray, Resumé
87. Witness Statement of I.M. Gray - June 20, 1991
88. Statement of Waste Not - June, 1991
89. Application of Educational Principles to Management of Resources by C. Cooney
90. Evidence from Waste Not
91. County of Simcoe Waste Management Master Plan, by Waste Not
92. Waste Diversion Program
93. C. Cooney (3 letters): March 21, 1991, November 12, 1990, November 12, 1990
94. Guide to Eating Ontario Sport Fish, p. 8
95. Michael McMurtry (letter) - September 12, 1991
96. Suggested Provisional Certificate Conditions (Proponent) - September 25, 1991
97. Suggested Provisional Certificate Conditions (CAN)
98. Household Hazardous Waste Ticket, No. 000629 - September 24, 1991
99. Suggested Conditions of Approval (Waste Not) - September 26, 1991
100. Stop Incineration Now, pamphlet
101. Report to Orillia City Council by the Alternatives Committee of Stop Incineration Now - July, 1990
102. Statement of Position, Council of City of Orillia - July 11, 1990
103. Hon. Douglas Lewis, MP (press release) - September 14, 1991
104. K. Clune (letter) - May 22, 1991, Ron Ellett (letter) - May 22, 1991
105. Suggested Provisional Certificate Conditions (MOE) - September 26, 1991









COMPARISON OF SURFACE WATER QUALITY AT SELECTED STATIONS TO PROVINCIAL
WATER QUALITY OBJECTIVES
ORILLIA LANDFILL MONITORING PROGRAM

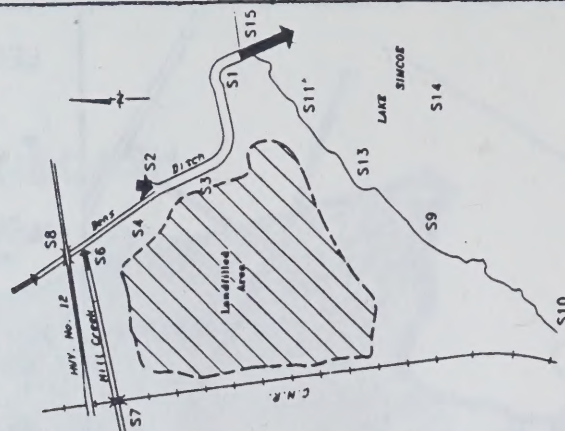
MILL CREEK AND BOB'S DITCH STATIONS

PARAMETER	OBJECTIVE mg/L	S7 MILL CK. (West of Railway) (Background)	S6 MILL CK. (Before Ben's Ditch)	S8 BEN'S DITCH (Above Hwy. 12) (Background)	S4 BEN'S DITCH (After Mill Ck.)	S2 SEWAGE TREATMENT PLANT	S3 BEN'S DITCH (After STP)	S1 BEN'S DITCH (At Access Rd.)
UNIONIZED AMMONIA	0.02	0.0012	0.0005	0.0003	0.0009	0.0292	0.0132	0.0207
DISSOLVED OXYGEN	4 TO 8	16.25	16.4	15.2	12.35	8.05	10.13	11.44
IRON	0.3	0.17	0.31	0.84	0.41	0.06	0.13	0.32
PHENOL	0.001	0.0017	0.0019	0.0037	0.0027	0.0068	0.0066	0.0071
NITRATE*	10	0.71	0.61	0.62	0.94	2.36	2.6	1.38
CHLORIDE*	250	71.46	73.21	261.72	88.9	106.13	98.99	104.99

LAKE SIMCOE STATIONS

PARAMETER	OBJECTIVE mg/L	SHORELINE					LAKE	
		S10 (West, Background)	S9 (Opposite Landfill)	S13 (Opposite Landfill)	S11 (Opposite Landfill)	S15 (Mouth of Ben's Ditch)	S12 (East, Opposite Beach)	S14 (300 m. Offshore)
UNIONIZED AMMONIA	0.02	0.0009	0.0014	0.0014	0.0031	0.0078	0.0041	0.0009
DISSOLVED OXYGEN	4 TO 8	14.81	15.96	18.64	18.14	16.48	15.13	15.44
IRON	0.3	0.01	0.05	0.05	0.05	0.11	0.05	0.03
PHENOL	0.001	0.0018	0.0018	0.0019	0.0018	0.0028	0.0016	0.0016
NITRATE*	10	0.08	0.16	0.14	0.15	0.84	0.49	0.03
CHLORIDE*	250	22.71	21.1	20.81	20.51	44.99	22.34	21.41

— Value Exceeds Objective
— Ontario Drinking Water Objectives
Average 1989 Values Used



COMPTON, M.J. 18-Mar-91 94-228

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Rev. March, 1991

CA20NEA 92E03

Ontario. Environmental Assessment Board.

EP-90-03

APPLICATION BY THE CORPORATION OF THE CITY OF
TORONTO FOR APPROVAL OF AN AMENDMENT TO ITS PROVISIONS

**RESOURCE CENTRE
INST. FOR ENVIRON'L STUDIES
UNIVERSITY OF TORONTO**

